

JULY, 1959



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3AP1 Cathode Ray Tube			
5BP1 5 inch Cathode Ray Tube			
7BP7 7" Cathode Ray Tube			
NC13A 7 inch Cathode Ray Tube (similar VCR97)			

## THIS MONTH'S SPECIALS

SCR522 Transceiver, freq. range: 100-150 Mc. Complete with valves including 832s, as they come, clean condition, £10.			
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5170 Ke.	5980 Ke.	7962.857 Ke.	8425.714 Ke.
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5710 Ke.	6423.333 Ke.	8161.538 Ke.	8362.857 Ke.
5810 Ke.	6450 Ke.	8360 Ke.	8645.43 Ke.
5910 Ke.	6960 Ke.	8371.428 Ke.	8682.857 Ke.
5950 Ke.			8751.428 Ke.
Crystals: 1898.75 Ke., 1986.25 Ke., and 1985 Ke., £2 each.			
3.5 Mc. Marker Crystals, miniature, with holder			
Meters—0-0.35 amp. R.F., FS6 and 101 type			

BC455 Command Receiver, 6-9.1 Mc., air tested, with valves £25	
APN1 Receivers, complete with valves	£7/10/0
As used in A.C. Power Supply for No. 22 Set. (see page 3).	
A.W.A. Transmitters, Mobile, freq. 33 Mc. Contains four type 6V6s, one 807 final. 6v. vibrator supply. Modulated. £7/10/0	
108 Mk. III. Portable Transceivers. Complete with Valves, Headphones, Mike. Freq. range: 7-9 Mc. Bargain	£7/10/0
128 Portable Transceivers, freq. range: 2-4.5 Mc. Nine miniature valves (1.4v. series), 0-300 microamp. meter. Less Crystals. Bargain	£7/7/6
3BZ Transmitter, complete with valves, 12v. operation	£15
AT5 Transmitters, as new, with valves & dust covers	£8/17/6
ARR/AT5 Connecting Cables	10/- each
SCR522 Signal Generator, freq. cov. 100-150 Mc. Calibrated dial. Complete with valves	£6
SCR522 28 volt Genomator Power Supply	30/-
SCR522 Modulation Transformers	30/-
SCR522 Driver Transformers	10/-
A.W.A. V.h.f. Mobile Transmitter, i.m. Freq. range 150-172 Mc. Crystal controlled, complete with min. valves and two 2E26 and vibrator supply. A gift at	£12/10/0
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Co-ax Cable, 100 ohm, any length	2/- yard
American Ampenol Co-ax Sockets (chassis type)	2/6
Pi Type Co-ax Plugs and Sockets	4/- pair
Command Receiver Flexible Drives, 12 ft. long	10/-
Relays—522 type, 5000 ohm	£1
Relays—522 type, aerial change-over	£1
U.S.A. I.F.F. Units, complete with Valves and Genomator, £5/17/6. Less Genomator, £4/17/6.	
Car Radio Suppressors: Spark Plug type, 2/- each; Distributor type, 2/- each, or 12 for £1.	
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APX1 Chassis, top deck containing 28 Miniature Ceramic 7-pin Valve Sockets, Condensers, Resistors, etc. etc. A good buy at	£1/15/0; postage 5/- extra
1625 Ceramic 7-pin Sockets 3/6; 807 Ceramic 5-pin Sockets 2/6	
Local Valve Sockets	1/- each
Valve Sockets, Acorn Ceramic	3/6 each
ALL Q-PLUS T.V. CONSTRUCTORS PARTS READILY AVAILABLE	
Pots, small wire wound: 25, 50, 100, 250 and 500 ohms, linear	
Electrolytic Condensers: 16 uF. 525v.w. (pigtail type), 2 uF. 525v. (pigtail type), 3/- each or £2/10/0 per carton of 20.	
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All Amateurs are urged to keep these  
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**VK3WI:** Sundays, 1100 hours EST, simultane-  
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# AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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**EDITORIAL****THE W.I.A. I.T.U. FUND**

The Federal Executive, Federal Council and Divisional Councils of the Wireless Institute of Australia express their thanks to all the Members, Non-Members, Short Wave Listeners, Trade Houses, Overseas Societies and Amateurs who have so willingly subscribed to the Institute's Fund to finance its own accredited Amateur representative with the Australian Delegation to the International Telecommunications Union Conference due to commence in Geneva this August.

After deducting the expenses attached to organising such a fund, the current nett total has reached £2,000—a most heartening indication of the seriousness with which the necessity to send our own representative was considered by those who contributed. Readers will remember that our estimated target figure requirement was to reach a sum of £2,500. Taking into account that many contributions were in excess of the £1 requested and that from 3,800 licensees a maximum of £3,800 was possible without contributions from non-licensed people, it is obvious that it is still possible to reach the target figure.

The Fund will close on 31st July and we are appealing to those who have not contributed to support the Fund before the closing date.

It is common knowledge now that the Wireless Institute of Australia,

with the assistance of Honorable Members of the Australian Government, has done all in its power to protect the current frequency allocations for the use of all Amateurs. Can we therefore anticipate your donation during the closing weeks?

Elsewhere in this issue is a brief summary of the contributions received for the Fund. A final balance sheet will be published after the Fund closes and any balance in hand after the Geneva Conference concludes will be directed to providing some service for the benefit of all Australian Amateurs, not for only those who are members of the W.I.A.

A tremendous effort has gone into making a stand on behalf of Amateur Radio and never before has it been so urgent for unity of thought and action as it is right now. Your cherished and unique hobby is in jeopardy! You have reached a critical stage in the position of Amateur Radio in the ever widening sphere of communications. What happens at Geneva could well effect the functioning of the Amateur Service the world over. Irrespective of petty grievances, irrespective of whether you are a member of the W.I.A. or not, irrespective of all thought to the contrary, you should support your own representative at the forthcoming Geneva Conference.

FEDERAL EXECUTIVE.

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## BOOKS OF THE YEAR FOR RADIO & T.V. ENTHUSIASTS

★ A.R.R.L. HANDBOOK, 1959 Edition	46/3	plus 2/-	post.
★ RADIO HANDBOOK, 15th Edition	85/6	" 2/-	"
★ BASIC TELEVISION, by Grob, 2nd Edition	66/9	" 2/-	"
★ RADIO DATA CHARTS, by Beatty & Sowerby, 5th Edition	12/6	" 1/-	"
★ WORLD RADIO HANDBOOK FOR LISTENERS, 1959 Edition	24/3	" 9d.	"
★ BEAM ANTENNA HANDBOOK, by Orr	32/6	" 6d.	"
★ CARE AND REPAIR OF HI-FI, by Feldman	31/-	" 1/-	"
★ RADIOTRON DESIGNER'S HANDBOOK, by Langford Smith	55/-	" 2/6	"
★ T.V. SERVICING GUIDE, by Deane & Young	20/9	" 1/-	"
★ G.E. TRANSISTOR MANUAL	20/3	" 1/-	"
★ RADIO VALVE DATA—WIRELESS WORLD	8/6	" 9d.	"

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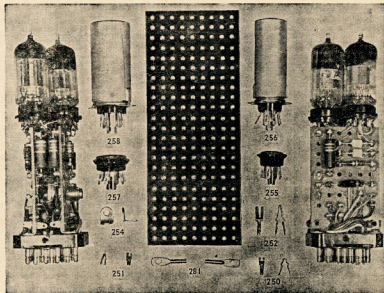
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# Wireless Sets No. 22 and No. 122

## Modifications Compiled and Tested by W.I.A. Publications Committee

**THESE** popular items of disposals equipment are finding great favour with Amateurs, many of whom have agreed to pass on the results of their developmental work through these columns.

Briefly, the two types are basically the same, but the 122 set provides for the use of two crystals in addition to the v.f.o., which is common to both.

The circuitry is that of a transceiver, operating from a primary source of 12 volts to a twin vibrator supply which provides an input power of approximately 20 watts c.w. and 10 watts on phone on two switched bands; 2-4 Mc. and 4-8 Mc. Valves used in the receiver and speech amplifier sections are of the 2 volt, directly heated variety, but the transmitter uses a 6U7 m.o., 807 p.a. and a 6N7 modulator. These heaters can be switched off to reduce battery drain to 0.9a. for listening only. Primary current on transmit is 6.3 amps.

It is not within the scope of this article to give a detailed description as it is considered that persons desiring to carry out modifications would be well advised to obtain a copy of the official handbook. The circuitry is difficult to follow and there is very little space for working among the closely spaced components. However, for those who are not familiar with these transceivers, a few more details could be of interest. Adequate metering facilities are provided, including a.v.c., drive, receiver h.t., transmitter h.t., and battery voltage. A b.f.o. with pitch control, together with separate r.f. and audio gain controls, plus a rather mediocre noise limiter give reasonably good control for Amateur operation. The output is through a pi-coupler which needs constant maintenance to ensure good contact. Push-to-talk operation and keying is accomplished by relays.

The units are true transceivers in that the transmitter frequency on v.f.o. operation is the frequency to which the receiver is tuned. It must therefore be emphasised that the lining up procedure must be thorough and great care should be taken not only in lining up according to the manual, but in the avoidance of adjacent channel QRM during operation.

It has been a general opinion that these units lack audio. With a desire for a higher percentage of modulation, a series of modifications were carried out and these are given below. However, it is considered by some that the desired results can be achieved without any modifications, simply by using a microphone with a much higher output. Some of these microphones are available and have been heard in tests with several VK3 stations. The one disadvantage appears to be that the increased sensitivity picks up background noise—mainly vibrator hum.

### AUDIO

For those who prefer the original dynamic microphone, the following

modifications will increase the modulation percentage:

(1a) Earth the cathode of the 6N7 modulator. The cathode is normally connected to the positive side of the heaters and this bias can be removed with safety.

(1b) Remove R4A from the grid of the 1F5 audio driver. If instability occurs, replace with an r.f. choke right at the socket—not in the resistor position.

(1c) Increase the plate load on V1C to 125K. It is normally 25K (R36B). The easy way is to lift one end and put 100K in series. Likewise increase the screen resistor to 600K. It is 100K (R4B), so put 500K in series. By-pass these at the h.t. end with a 0.01  $\mu$ F. capacitor.

This microphone increases the gain of the microphone pre-amplifier.



Fig. 1.

T1—Existing driver transformer.

T2—Miniature speaker transformer.

SW1—is the normal/remote s.p.d.t. switch.  
Rel.—Existing relay R4A, modified by removing the "break/right" spring-set (contacts 21 and 22) and replacing with a change-over set.

J1—Existing Jack marked "Line".

Some sets have given trouble with low frequency instability on phone. The following treatment was found to be effective:

(2a) By-pass h.t. at R5A in the plate circuit of V3A with an 8  $\mu$ F. electrolytic capacitor. There is ample room for this near R5A.

(2b) Add a screen by-pass to the 1F5 audio driver. This does not appear to be necessary in all cases, but has been found useful when instability has resulted following circuit changes.

Whilst some operators have endeavoured to change the frequency response in the modulator circuitry, others have obtained good results by leaving this severely alone. These modifications have been suggested and are given merely as a basis for individual experiment.

(3a) Remove the inverse feedback components R5B and C17A. This feedback only levels out the response of the receiver. High frequency response is said to be better.

(3b) Decrease coupling condenser C16E to 0.002  $\mu$ F. This is to decrease the low frequency response.

### SELECTIVITY

Receiver selectivity has been claimed to be improved by removing the resistors which are in parallel with the i.f. coils. As these resistors have values of 500K and 750K, it was decided to test two unmodified receivers against one

from which all the relevant resistors had been removed. All sets were aligned and readings taken to determine bandwidth. It is extremely doubtful whether any improvement comes from this difficult modification and it is therefore not recommended.

Better results were obtained by the use of a Q Multiplier connected by coaxial lead to the mixer plate.

### POWER INCREASE ON PHONE

Increased power is possible for phone work only by adding a toggle switch to the power supply and connected between pin 5 on the power outlet plug and ground. When this switch is closed, RL1 is energised and power input is increased to approximately 18 watts. This modification is beneficial if increased modulating power is made available. Increased voltages make the receiver more sensitive (and noisy).

Care should be used with this modification for two reasons. (a) return the toggle switch to "off" before switching on the b.f.o., otherwise the transmitter will come on; and (b) when switched to high power, re-tune and re-net.

After careful testing, it was concluded that the advantage, if any, gained by the increase of power was more than offset by the undesirable effects resulting from lack of regulation.

### RECEIVER AUDIO OUTPUT

A proven method of obtaining ample loudspeaker output is illustrated in Fig. 1.

The speaker transformer was mounted under the chassis in the compartment under the 1F5. Shifting the tag strip from the rear wall permits this and the same mounting holes suffice. The tag strip is re-located under the chassis on a bracket held by a mounting screw which holds the bank of electrolytic relay delaying condensers. This new position shortens the wiring to the tag strip.

In operation, the selector switch gives the type of operation desired with no loss of efficiency on transmit. It will be seen that transformer not required is shorted out and the 1F5 is never without voltage on the plate.

Another method is to use the two existing break contacts (21, 22) and J1 as previously mentioned but use a speaker with a 200 ohm line transformer. This can be made up from a normal speaker transformer by dismantling the core, unwinding the secondary and then take off turns from the primary until a d.c. resistance of 50 ohms remains. Take out flexible leads, add an insulating layer and then rewind the primary and reassemble the core. The output obtainable by this method is not as great as that which is illustrated.

### MAINTENANCE

Briefly, all that is necessary to get really good performance from a 122 set is to ensure all relay contacts are clean

(Continued on Page 16)

# THE WARBURTON FRANKI PAGE

## BUILD YOUR OWN AMATEUR TRANSMITTER with a HEATHKIT "SENECA" MODEL VHF-1

IT'S EASY & IT'S FUN. The famous Heathkit construction manual makes everything so simple. You get easy-to-follow detailed information that even explains proper soldering procedure. You just can't go wrong.

### SPECIFICATIONS

Power Input ..... 6 metres: 140w. CW, 120w. Phone (peak).  
2 metres: 110w. CW, 95w. Phone (peak).  
Output Impedance ..... 50-72 ohms (nonreactive)  
Output Coupling ..... Link (coaxial)  
Operation ..... Crystal-VFO, CW-Phone.  
Band Coverage ..... 50-54 Mc., 144-148.3 Mc.  
Audio ..... Screen modulated, controlled carrier.  
Standby (phone, CW) ..... 120 watts.  
Full load (phone, CW) ..... 400 watts (intermittent).



Cabinet Size:  
16 1/2" wide  
10 1/2" high  
10" deep.  
Net Weight:  
50 lbs.  
Shipping Weight:  
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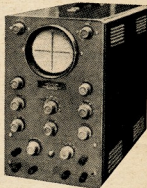
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### CATHODE RAY TUBE

Coscor 4 in. (10 cm.), single beam.  
Type 80D with green fluorescence,  
operating at 1.5kV.  
X sensitivity direct to plates:  
630/Va3 mm/V d.c. (21 V/cm.).  
Y sensitivity direct to plates:  
950/Va3 mm/V d.c. (13.7 V/cm.).

### Y AMPLIFIER

Gain variable from zero.  
Maximum sensitivity 50 mV/cm.  
Freq. response: 5c/s. to 3 Mc/s.  
(plus or minus 3 db.).  
Output deflection:  
3 cm. at 3 Mc/s.  
3 cm. at 7 Mc/s.  
Useful response to 10 Mc/s.  
Rise-time 0.12 usec.  
Overshoot less than 10%.

### TIME BASE

Repetitive operation. Synchronised  
from positive or negative pulses  
derived externally or from the  
Y amplifier. Expanded time-base  
amplitude continuously variable  
from zero.

#### Time-base frequency ranges:

10 c/s. to 100 c/s.  
100 c/s. to 1,000 c/s.  
1 kc/s. to 10 kc/s.  
10 kc/s. to 100 kc/s.  
100 kc/s. to 500 kc/s.

Ranges cover sweep velocities  
from 10 msec./cm. to 0.2 usec./  
cm. Fly-back suppressed on all  
ranges.

### X AMPLIFIER

Gain variable from zero to x 28.  
Maximum sensitivity 0.75 V/cm.  
Freq. response 2 c/s. to 275 kc/s.  
(plus or minus 3 db.).  
Rise-time 1.4 usec.

### X SCAN

Switch selects X Scan from:  
Time-base generator;  
X amplifier for external signals;  
X amplifier with 50 c/s. sinusoidal  
input having continuous control  
of phase from 0 to 135 deg.

### INTENSITY MODULATION

Coupling through 20 msec. time  
constant to CRT grid.

### POWER SUPPLY

Mains: 200v. to 215v., 215v. to 234v.  
and 235v. to 255v. a.c. 100v. to  
125v. to order.  
Frequency: 50 c/s. to 100 c/s.  
Consumption: 50 W.

### CALIBRATION

1V peak-to-peak internal source  
at mains frequency.

### SIZE & WEIGHT

Height 14 1/2 in. (37.5 cm.).  
Width 9 in. (22.9 cm.).  
Depth 18 1/4 in. (46.4 cm.).  
Weight 18 lb. (8.2 kg.).

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# The "Mickey-Match"

A SIMPLIFIED S.W.R. INDICATOR AND OUTPUT MONITOR

ROBERT C. BUNCE, K6QHZ

Here is an ingenious version of the Monimatch, using a form of construction that eliminates a few components and, in doing so, simplifies the electrical problems. The key is the use of flexible co-ax cable (reminiscent of the co-ax Twin Lamp) for the line section, making it possible to have the input and output connections close together.

IN view of the current popularity of s.w.r. indicators of all varieties, we thought we might as well throw this little piece of gear into the ring. Because the instrument lends itself to a compact mounting box we were about to name it "Minimatch," but that seemed rather common so we took the next name that came to mind—Mickey.

Enough of that. Little Mickey is just an off-spring of the Monimatch. We started out to make the Monimatch originally, but couldn't find a piece of sheet metal of the proper dimensions around the shack. Discouraged, we sat down and cogitated. Suddenly the light dawned. The pick-up trough of the original Monimatch is really nothing but a piece of co-ax with one side missing to let some r.f. out. Now, if you could just take a plain ordinary piece of co-ax and slide an insulated wire under the shield, it would pick up r.f. just like the old Monimatch line.

It worked. In fact, as the final design took shape this one modification led to several other design short cuts that add up to an extremely simple, and surprisingly accurate, s.w.r. indicator. To enumerate: since co-ax is flexible, and the field entirely contained inside the shield, the pick-up section can be rolled up and put in a small box of common dimensions. When rolled up, the input and output connectors can be placed close to each other, and the two ends of leads from the pick-up line can be brought out near each other. In the final version these leads are brought directly to a switch, kept short, and the r.f. is switched. Exit one crystal diode, and with it the problem of matching diodes—a single diode detects both forward and reflected power.

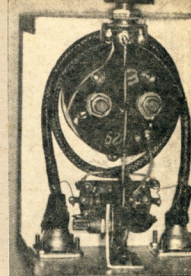
One other modification was the clincher. A later version of the "daddy" Monimatch uses a fixed line-terminating resistor, and the impedance of the pick-up line is adjusted by varying its proximity to the main conductor until the impedance equals the value of the resistor. With the Mickey-Match, it is obviously impossible to vary the spacing in this manner, but the resistance is varied instead; i.e., the pick-up line is terminated in a potentiometer which is adjusted to equal the impedance of the pick-up line.

## CONSTRUCTION

The unit pictured and described here is designed for power levels between 10 and 200 watts and uses 73 ohm RG-59/U, although a 53 ohm version, using RG-58/U, could be built in exactly the same manner. Parts required are listed under the schematic diagram, Fig. 1. The components are mounted in a 3" x 4" x 5" aluminium box, with the meter and selector switch on top, the sensitivity potentiometer on one end, and the two coaxial connectors on the other end, near the switch. The terminating potentiometer is mounted inside on a bracket, since it only has to be adjusted once, during calibration.

Construction of the pick-up section is shown in Fig. 2. To make it, use a piece of RG-59/U (or 58/U) about 16" long. The length isn't critical. Strip the outer jacket from the entire piece. Bunch the shield together into the middle of the line, and work a hole through the bunched braid about 1/8" from each end. Thread a piece of thin insulated wire (the thinner the wire the better; we used No. 30 enameled in this version) through one hole, under the braid, and out through the other hole. It's easy if you feed through a stiff wire first, and use it to pull the thin wire through. Stretch the braid back over the co-ax centre conductor, with the insulated wire inside, and the section is made. Install co-ax connectors and connector hoods (those funnel-shaped things) on the ends on the line.

Fig. 3 shows how the co-ax is looped and installed around the meter in the



This inside view shows the co-ax line section looped around the body of the microammeter. The forward-reflected switch, terminating potentiometer, and crystal diode are between the two co-ax fittings at the top. The variable resistor at the bottom is the sensitivity control.

box, with the pick-up line ends connected directly to the switch. Keep these leads as short as possible to prevent unnecessary reactance from creeping into the act.

The inside-view photograph shows the general wiring details. Remember that crystal diodes don't like heat; hold the leads in a pair of long-nose pliers while soldering—solder quickly, and keep hold of the leads until the solder joints cool. Keep the r.f. leads as short as possible, with one lead from the crystal connected directly to the jumper across the switch and the other to a tie point, with the by-pass capacitor connected straight to the ground lug. We removed the back cover from the terminating potentiometer to reduce internal capacitance and it helped reduce residual reactance, particularly on ten metres.

Before the completed unit can be checked out, you'll need a dummy load. We made a 70 ohm load by soldering a tremendous quantity (80, to be exact) of 330 ohm, 2w. resistors in a series-parallel arrangement that came out to 70 ohms. We happened to have a basket full of the things and they worked well, but any combination of carbon resistors that adds up to 50 or 70 ohms, as the case may be, and that, in toto, will handle the power output of your transmitter, will do the trick. Non-inductive loads also are available commercially. Don't try to calibrate with a light bulb—it "just don't work." Light bulb filaments vary all over the lot in resistance, and they have a ten-to-one or better ratio of hot resistance to cold resistance.

## ADJUSTING R1

The forward-power switch position is labelled "Calibrate" and the reflected-power switch position "Read" (meaning

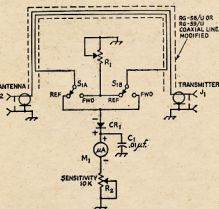


Fig. 1—Circuit of the co-ax line s.w.r. indicator.

- CR1—Disk ceramic.
- CR1—IN34 or equivalent.
- J1—Co-ax chassis receptacles.
- M1—A-200 microammeter, or other range depending on sensitivity desired.
- R1—200 or 350 ohm carbon variable.
- R2—Potentiometer, linear or log taper.
- R3—D.p.d.t. "tone-control" switch.

(Note: Values as high as 500 ohms may be used for R1 if low values are not readily available, but the higher the value the more critical the adjustment.)



"Read s.w.r. in this position"). To adjust R1, leave the cover off the instrument. Attach the dummy load to the antenna connector, and the transmitter output to the transmitter connector. Set the selector switch to the "Calibrate" position. Energise the transmitter on 10 metres, or the highest band used, and load the transmitter into the dummy. If the meter goes off scale, and it probably will, turn the sensitivity control R2 until it comes back on scale.

Now switch to the "Read" position, and adjust the sensitivity control for as high a reading as possible, keeping

To check out the over-all balance of the instrument, turn the switch back to the "Calibrate" position and adjust the sensitivity control for a full-scale reading. Switch back to the "Read" position and re-check to make sure the null is still complete. Then connect the transmitter to the antenna jack and the dummy load to the transmitter jack. The null reading should now occur with the switch in the "Calibrate" position, and the full-scale reading should occur with the switch in the "Read" position; i.e., the functions reverse. If the reversed readings exactly (or almost ex-

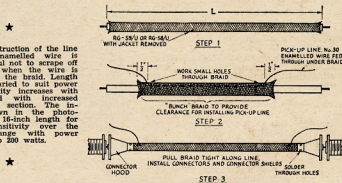


Fig. 2.—Construction of the line section. If enamelled wire is used, be careful not to scrape off the insulation when the wire is drawn through the braid. Length "L" can be varied to suit power level; sensitivity increases with frequency and with increased length of line section. The instrument shown in the photograph uses a 16-inch length for reasonable sensitivity over the 3.5-30 Mc. range with power levels of 10 to 200 watts.

the needle on scale. Turn the terminating potentiometer R1 for a null in the meter reading. If your dummy load is reasonably good the null will be extremely deep—the meter reading should drop almost to zero. The unit pictured nulled out to less than 5  $\mu$ A. on 10 metres with the sensitivity potentiometer full out, and with 50 watts of r.f. in the load. The setting where the null occurs will vary all the way from 20 ohms to 150 ohms, depending on the size of the pick-up wire and dielectric constant of its insulation. The setting of this resistor (at the null) is the characteristic impedance of the pick-up line. The higher this final impedance, the more sensitive the instrument. The version pictured, using No. 30 enamelled wire, nulled out at about 90 ohms, and the sensitivity is about the same as earlier versions of the Monimatch.

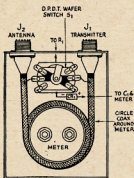


Fig. 3.—Installation of the line section. R.f. leads should be kept as short as possible, but d.c. leads can be as long as desired. Longer line sections can be installed by wrapping more turns around the meter.

actly) equal the original readings, the instrument is in good shape. There was no detectable difference in these readings with the unit pictured.

With this adjustment, replace the cover, and you can use the thing to adjust antennas with no further ado.

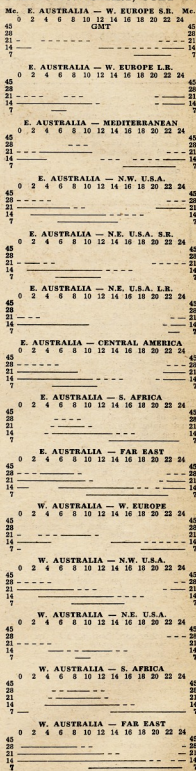
## OPERATION

In actual use, it is only necessary to set the switch to the "Calibrate" position, rotate the sensitivity control for a full-scale deflection, and switch to the "Read" position. To use the instrument while adjusting or pruning antennae, or for adjusting link-coupled antenna tuners, you don't need any graphs (although it is possible to calibrate for s.w.r. and power). Just set the switch to the "Read" position and, with power in the antenna, adjust the antenna or the tuner for minimum meter reading.

If you want to make a kilowatt version, use a bigger box and RG-8/U or RG-11/U. The meter can be less sensitive (a 0-1 mA. meter will work well), or the pick-up section shorter, but the principles are the same.

If you have an extremely low-power transmitter, the forward readings on the 80 and 40 metre bands may be less than full scale, or even half scale, with the sensitivity pot. full out. This can be overcome by using a longer piece of co-ax for additional pick-up. You can coil up as much of the stuff as necessary, with no effect on the performance. However, a full-scale deflection isn't actually necessary to the functioning of the instrument, just so enough of a forward reading is obtained to allow a good comparison with the reflected reading.

## PREDICTION CHART, JULY '59







# SIMPLE SIDEBAND\*

## PARTS FIVE and SIX

### THE ADJUSTMENT OF PHASING SHIFT EXCITERS

Though mainly concerning the two coil systems of obtaining the r.f. phase-shift, the following adjustments will be of equal value to those who use other systems providing you make allowances for the different means of obtaining the same end. The circuit of the two-coil system s.s.b. exciter is shown on page 4 of May 1959 "A.R."

Because I have long been of the opinion that all stations, whether a.m. or s.s.b., should have an oscilloscope, I am only discussing tuning methods using this versatile instrument. In any case, in s.s.b., a 'scope is practically a must. To back up my above statement, most checks given to a.m. Hams by observer stations, are on modulation percentage.

In addition to a scope you will require a simple tone oscillator. It need not be elaborate, but it must be free from harmonics. Fig. 1 shows the circuit of an oscillator which will cost but a few shillings though most likely the "bits and pieces" will be already about the place.

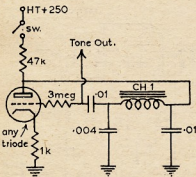


FIG. 1.

Fig. 1—A suitable tone oscillator. CH1 may be the primary of an output transformer. The two condensers to ground at each side of CH1 may need different values to get the right frequency of tone.

An r.f. indicator consisting of a crystal diode and an r.f. choke will indicate the presence of carrier and will be an extremely useful gadget about the shack. A v.t.v.m. or field strength meter may be used instead if you wish.

Begin your adjustment by adjusting the wire wound 1k pot. in the cathodes of the 12AT7 to approximately the centre of its range. Turn the audio gain control down and apply all the normal voltages. Proceed in the following order:—

(1) Couple the link of your indicator to the oscillator coil L1 and adjust slug for maximum reading. Back off the slug a little on the high side to reduce crystal current. (Usual for crystal oscillators.) Rotate the two carrier pots. P2 and P3. If the oscillator stops, wind

out the slug a little more until reliable oscillation is obtained at all times at any setting of P2 and P3.

(2) Couple the indicator L2 and adjust for maximum on meter. Check again that the oscillator is not pulled out of oscillation.

(3) Couple to L3 and adjust for maximum reading. It will be noted that the reading will be maximum when the two pots. are near the ends of their travel.

(4) Couple the indicator to each of the tuned circuits in the following amplifier stages and adjust for maximum output.

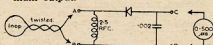


Fig. 2—By connecting the top to A and B and a meter to C and D this instrument will indicate the presence of carrier. Connect an unknown a.c. source to A and B and you will get a comparative reading. Connect an antenna to A and you have a field strength indicator. Connect phones to C and D and you have a broadband crystal set.

(5) Leaving the indicator coupled to output stage, wind out carrier using first one balance control, then the other. Return again to the first control, then back to the second. Continued adjustment should completely eliminate the carrier. A receiver, when tuned to the frequency, will of course show the presence of signal. This will be received directly from the crystal oscillator. I mention at this stage that failure to balance out the carrier may be due to a number of causes. Usually it is either due to self oscillation in the amplifiers or alternatively inadvertent coupling between L1 and L2 and some of the later tuned circuits.

(6) Remove the crystal oscillator tube. Couple the tone oscillator to the top of the audio gain control. The frequency of the tone must be adjusted to about 1000 cycles to 1250 cycles, dependent on the demands of the audio phaseshift network used. Couple the horizontal and vertical plates either to the plates of the double triode following the phaseshift network or to the "hot" end of the secondary windings of T2 and T3. Adjust the pot. P1 until you get a circle on the scope. Get this picture as near a circle as possible. Mark this potentiometer setting.

(7) Couple the scope to the r.f. amplifier stage; use the internal time base (50 cycles a.c. may be used if you make allowances for the non-linearity of the sweep and consequent squeezed-up picture at the ends of the trace).

(8) Adjust the slug of L2 to minimise ripple along the top and bottom of the pattern. Before adjustment, the picture may have looked like Fig. 3. Fig. 4 shows a partly adjusted exciter. The object is to get as little ripple as possible. After each adjustment of the L2 slug you must switch off the tone and balance out the carrier again. You will note that every other depression in the ripple is due to the presence of carrier.

## LESTER EARNSHAW, ZLIAAX

(9) Switch to the other sideband by reversing the two leads from either T2 or T3. The ripple may appear larger now. Again adjust the slug L2. Try and get the ripple even on each sideband.

(10) Touch up the adjustment of P1 to minimise the ripple. Switch sidebands and touch up the slug L2. Switch sidebands again and touch up P1. Keep doing this until you wear the ripple down. You will find that there is an in-between setting of the two controls which will give minimum ripple.

(11) Adjust the 1k pot. in the cathodes of the 12AT7 for minimum ripple. Go back over the previous measurements. The final picture should look like Fig. 5.

It is important that you do not favour one sideband. You will be favouring that sideband for one frequency only—the frequency of the tone. Here are a few points which may help out if you strike trouble:—

If you use the more common type of network available, such as the B. & W., etc., you must deliberately apply unwanted audio input to get equal output. Pins 3 and 7 of the B. & W. type network require 2/7ths of the voltage input. Pins 1 and 5 receive the other 5/7ths of course. This you do with P1.



FIG. 3.—Carrier and unwanted sideband present.  
FIG. 4.—Carrier suppressed. Unwanted sideband present.



FIG. 5.—Carrier and sideband suppressed.

The two coils L1 and L2 must have the correct spacing. Although diode balanced modulators do not seem to be fussy about balanced amplitude of the two r.f. inputs, it is absolutely imperative that the phase relationship be

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\* Reprinted from "Break-In," Sept., Oct., 1958.





to unclamp, the screen voltage to rise, and the plate current to rise and accommodate the signal.

Reviewing the situation a signal applied to the grid allows the screen voltage to rise and this of course allows the plate current to rise. So we have a state which is purely automatic and the clamp tube is really operating as a gating valve.

There are one or two superior points about this method of operation which I think will appeal to many:

(1) May be used for a.m. without alteration to the circuitry. Just feed your r.f. into the grid and modulate in the normal manner. Don't forget this is actually an a.m. amplifier.

(2) Requires no bias supply.

(3) Requires no screen supply other than a simple dropping resistor.

(4) Practically no adjustment required unless you are pioneering a new tube type.

(5) Is the most easily adjusted and the most tolerant to mis-adjustment of any amplifier I have ever known.

Disadvantages (and it has one major disadvantage) in the event of the clamp tube failing, more than likely you will also be buying a final tube as well. This may be overcome in two ways, one by using two clamp tubes in parallel; or two, by using an overload cutout in the final plate supply.

Here are one or two conditions: The clamp tube must not clamp too heavily. It must allow the screen voltage to rise the moment signal is applied to the grid. This is quite important. I found that with most final tubes the 6Y6 was too severe in its clamping action and would not allow the screen voltage to rise until after considerable signal had arrived at the grid. This, of course, gives distortion at lower levels.

Here is data on operation of the 813 as a ZL Linear:

Plate voltage, 1,000 volts.

Grid leak, 10,000 ohms.

Screen resistor, 40,000 ohms.

Clamp tube, 6F6, 12A6.

Standing plate current, 40 to 50 mA. With 3 mA. of grid current, with carrier wound in, or on tone modulation: plate current 120 to 150 mA.

On voice modulation plate current rises to approximately 100 mA. Different 813s have given values considerably different from these figures. Different clamp tubes will give different standing plate currents. The larger the standing plate current, although the power wastage in heat is higher, the better the linearity because the less the plate impedance of the final valves.

Values of grid and plate tuning condensers do not seem to be quite as critical as Class AB2 or Class B operation but in any case one cannot go wrong in using the Class B values. I use the following values which were worked out from the good book:

Plate tuning condenser:

80 mx: 240 pF. in circuit capacity.

40 " 120 " " " "

20 " 60 " " " "

15 " 40 " " " "

10 " 30 " " " "

Grid tuning circuit:

Values same as above.

In order to use a 6Y6 clamp tube and to adjust the clamp action accurately, Ron ZLIARH and Cliff ZL2AHV both came up with the suggestion that by placing a potentiometer across the grid leak the clamp bias could be adjusted separately.

Although I have not applied this system to other tubes (other than a 6146), various stations on both 80 and 20 MHz. are using the system on 4-125A, 807s, and 1625s. Don Stoner, W6TMS, is at the moment playing with the system applied to a kilowatt final.

I mention, before shutting up shop, that there seems to be many who would

1 These plate current figures occur on tone modulation or with carrier wound in. Normal speech peaks then cause plate current to rise to approximately 100 mA.

have it that the system doesn't work, that it splatters, that it shouldn't be on the air, etc., but a Collins 75A4 just three miles away from this QTH gives an excellent bill of health. Further, two tones, a 1400 cycle and a 600 cycle, when fed into the exciter, show the following outputs: 1400 cycles, 600 cycles, 2000 cycles, 800 cycles and away down, at approximately 30 db., the harmonic products! All of which means that the amplifier is "clean". Scope patterns are of course excellent. Like all amplifiers, it will of course overload, it must be correctly loaded (which means heavily), but otherwise it is about the easiest-to-get-going linear amplifier I have ever used.

In conclusion, I give a list of stations who have adapted the ZL Linear to suit tubes other than those used here. I am quite sure that these stations will be found ever-ready to give out data concerning the particular tube types they use.

ZL2AHV-813.

ZL3BG-4-125A.

ZL2AVA-807s in parallel.

ZL1ARH—One of the double tetraode series with a QQE number, but very similar to an 829.

ZL1ND-KT88.

The 6146 I have found to be unsuccessful in this set-up. It appears that the screen does not exercise sufficient control of the plate current.

My thanks to those who have, over the last year, assisted in pioneering the ZL Linear, even though they often were not easily convinced that it would work. My thanks especially to John ZL2AG, who was the second station sufficiently daring to use the principle (to a 4-125A), and to ZL2AHV for the many tests he has himself conducted with it.

Next month I hope to discuss voice control and also show the system in operation at this station.

— . . . —

## "CQ" DX CONTEST RESULTS

### AUSTRALIA

#### C.W.—Single Operator

Call Sign	Band	Score	QSO	Zon.	Cnts.
VK2GW	All	354,172	627	76	120
VK2PV	All	54,752	175	48	68
VK2AKF	All	17,020	156	21	16
VK2APK	14	31,659	189	23	38
VK2OW	14	741	13	9	10
VK2CX	14	19,836	102	21	36
VK3XB	7	9,604	120	14	14
VK4EB	21	23,580	132	23	37
VK4XW	7	3,179	64	9	8
VK5NO	All	217,308	420	75	107
VK5JT	21	2,709	44	12	7
VK5MY	14	22,320	113	22	49
VK6RU	All	476,720	700	85	151
VK7UW	All	119,500	347	53	72
VK7LZ	All	30,537	133	34	47
VK7KA	21	10,764	69	24	28

#### Phone—Single Operator

Call Sign	Band	Score	QSO	Zon.	Cnts.
VK2AKF	All	28,126	131	36	46
VK3HL	All	11,840	68	30	34
VK3MX	21	540	10	8	10
VK4BG	21	6,148	48	18	20
VK5AB	21	46,560	173	31	66
VK6RU	All	131,026	243	75	116
VK6CL	21	14,625	77	22	43
VK7WA	All	21,175	103	33	44
VK7LZ	All	16,985	81	35	44
VK7SM	14	5,006	55	17	19

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# Conversion of the SCR522 Transmitter to 5 Metres

R. L. LEAR,\* VK2ASZ

WITH the conclusion of the I.G.Y. close at hand and thence the close of the 6 metre band to our use, thoughts of many Amateurs will turn to greater use of the old 5 metre band as well as 2 metres, for local communication and for use in W.I.C.E.N.

Many chaps with 6 metre equipment will find no difficulty in converting that equipment to use on 5 metres, but this article is directed to those who have SCR522 equipment lying around as a result of the large issue of this equipment by the W.I.A. Circuits are available from Reg. Brooks, of Gosford, so that no trouble should be experienced by anyone in sorting out the mysterious innards.

First move in the conversion is to firmly grasp a pair of side cutters in your hand and snip out all the wires going to the relays at the audio end of the chassis. The relays can be removed and placed carefully aside. All the side tone circuitry may be removed if it is desired to use the modulator as it stands with a carbon microphone. However, I feel that the quality of modulation is not good enough to meet the standards of the usual run of Amateur Stations and a better idea is to use the good quality audio transformers in the 522 and construct a separate modulator using a good shielded enclosure and a good quality crystal insert. The difference is worth the trouble.

With the transmitter, mechanical changes to be carried out are as follows. The aerial plug is removed and two co-axial sockets are inserted in its place. This is to carry the aerial lead-in and the lead to the receiver used. One of the relays is mounted on the side wall away from the oscillator tube and acts as aerial change-over relay. A word of warning here. Check the relay contacts first as some of the relays are of the self-shorting type and have an internal connection to the frame of the relay.

The crystal sockets in the front of the transmitter are out of circuit until the relevant slide is in, thus closing the relevant switch contacts on the transmitter front. Easiest way here is to drill a small hole in the slide bracket near the left hand edge and then pushing in the first slide, and drilling a matching hole in the slide itself. A small screw will then hold the slide in place so that the first crystal socket is in circuit and able to be used.

An 0-1 ma. meter is installed on the front panel and connected at the back to the meter switch plug. All existing shunts in the set are adjusted for an 0-1 ma. movement.

## WIRING CHANGES

(1) Rewire heaters if it is required to use 6 volt tubes.

(2) Shunt a 250 pF. condenser across the oscillator anode tuned circuit. (Note. This was to suit the 6450 crystal used here and will need to be varied to suit the crystal used in your station.)

(3) Remove coil from 12A6 anode circuit and replace with a 20-turn centre-tapped coil. (22 s.w.g. on  $\frac{1}{2}$  inch diam. air wound.)

(4) Remove Ohmite ZO RFC's from grids of the 832 2nd harmonic amplifier. (Also remove note K if fitted. This is a capacitor from bottom side of coil to earth.)

(5) Remove 25K resistors from junction of 150v. bias line and bottom of chokes.

(6) Add two 15K or 20K resistors from 832 grids to bias line point.

(7) Remove Lecher lines from 832 2nd harmonic amplifier anodes.

(8) Unscrew c.t. position of lines and remove completely, then lift back shielded B+ line to 832 temporarily out of the way.

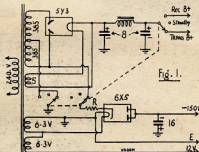


Fig. 1.—"R" is adjustable to give -150 volts from plates of 6XS (approx. 10K ohms needed.)

(9) Connect the two 20 pF. grid coupling condensers from grids of final 832 to the stator plates of 1st 832 anode split-stator condenser.

(10) Wire coil of 11 turns (22 s.w.g. on  $\frac{1}{2}$  inch diam. air wound) across the condenser and fold down between anode pins of tube. Connect folded back, shielded B+ lead to centre-tap of this coil.

(11) Remove final tank coil and substitute a 12-turn coil (20 s.w.g. on  $\frac{1}{2}$  inch diam.) air wound with a gap in the centre of  $\frac{1}{2}$  inch for coupling loop, already there.

(12) Put the g.d.o. over all tuned circuits and ensure that they will cover the required band. In my case, with a 6450 crystal, the line-up was 6C6 6450, 12A6 19350 mc., 1st 832 58.030 mc., and 2nd 832 as straight out final on 58.030 mc.

## POWER AND BIAS NEEDS

At this stage a short discussion on the power and bias requirements of the transmitter would be in order. In its original form the transmitter used a genemotor supplying 300 volts h.t. and minus 150 volts for bias. This is the easiest method to use. By making up a normal 385 aside power supply and using a separate rectifier off the same transformer to supply the requisite -150 volts. This is shown in the circuit of Fig. 1.

You will note that a separate switch section is used to cut the bias lead from the secondary of the transformer. This is essential and if it is not done, when the switch is put to the standby or receive position, a positive voltage of 150 volts appears at the output of the B+ point, even though the transformer centre-tap is open-circuit from ground. This allows the transmitter oscillator to work and creates a signal in your receiver on your own frequency which is most annoying.

For the diehards, however, who insist on using battery bias, you will see that the -150 volts is applied across a divider network consisting of R147 (1.8K) and R146 (6K) to feed the transmitter, and R152-3 and R152-4 (50K) and R145 (15K) to feed the modulator. A little maths. here will show that this provides approximately 20 volts negative to the modulator grids and approximately 37.5 volts negative to the transmitter bias line. If the resistors 152-3, 152-4, and 145 are removed and the two wires swung over as shown in Fig. 2, then by applying a battery voltage of -30 volts to the old -150 volt lead, these voltage requirements will be met.

The power requirements are as follows:

Pin 1	.....	-150 volts
Pin 2	.....	+12
Pin 3	.....	+300 "
Pin 8	.....	earth "

The lead from pin 4 was transferred to a pin left vacant by the removal of the sidetone wiring and then 300 volts was fed to pin 4 from pin 3 and a lead run inside the transmitter up to the aerial change-over relay, through it and back to the transferred pin. This means that when the h.t. is applied to the transmitter the 300 volts flows through the relay coil and the drain from the pin 4 connection is just enough to give a 12 volt drop across the relay and pull it in smartly.

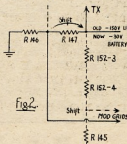


Fig. 2.—Alter wiring to that shown in solid lines.

## TUNING UP

Tuning the transmitter is quite simple. With the switch on position 1 (50 ma. full scale), tune 1st left hand control to maximum. The 2nd control can be tuned for a dip on this position or on pos. 2 for maximum (100 ma. full scale). Position 3 (100 ma. full scale) (Continued on Page 13)

\* 40 Brisbane Street, St. Marys, N.S.W.

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VIF7 5.5 Mc/s. Sound Trap, Sound I.F. or Sound P.V.	13/9
VIF8 5.5 Mc/s. Ratio Detector	24/9
UIF1 Unwound I.F. Assembly	5/6 ea.
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VH02 Horizontal Sine Wave Coil	9/2 ea.
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# TECHNICAL TOPICS

BY PAT HAWKER (G3VA)\*

## CHOOSING CONDENSERS

**P**ROBABLY as many fixed condensers are used in Amateur Radio equipment as all other components put together. And yet, all too often, we just search around in the junk box for the right number of "muffs" or "puffs", hope the rather dirty object we discover will stand the voltage, and reach for the soldering iron... and then wonder why results do not always match up with expectations.

Recently, there have been several useful articles on choosing condensers for particular applications (especially WIZEO/2 on the right types for an s.b. exciter in "QST", July 1958, and W5DF in "CQ", August 1948, on negative temperature coefficient condensers) while a good deal of information for designers appears in the standard reference books. Although a full scale attack on this subject would take more space than can be spared for "Technical Topics", it is felt that the following notes may at least indicate to newcomers some of the complexities involved.

Not so many years ago, condensers fell conveniently into three main categories: paper condensers for a.f. work; mica condensers for r.f. circuits; and electrolytics for smoothing. Today, there are dozens of different types, each with its own particular merits, and disregard of a designer's specification may jeopardise results and reliability.

For example, waxed cardboard paper tubulars are still widely used, but should be avoided for any position where a high insulation resistance is essential. After a few years' use—and much less than this in the tropics—their d.c. resistance may easily amount to only about 5 megohms. For many purposes this does not matter much, but, for instance, if used for inter-valve coupling, may easily result in a positive bias being applied to the following valve; avoid them also for decoupling a.g.c. lines.

To reduce leakage there have been introduced many new types of containers which maintain an insulation resistance of some hundreds of megohms even at quite high temperatures (the effect of high ambient temperatures on the life expectancy of some type of condensers can be alarming).

Then again, the type of voltage applied across a paper condenser affects considerably the ratings required. It is sometimes forgotten that high a.c. voltage peaks may occur in quite low power a.f. stages, and any condensers subjected to these voltages must be rated to withstand the peaks, plus any direct voltage which may be across them. Condensers subjected to continuous a.c. stress—for example chassis, aerial and earth isolating condensers in a.c./d.c. equipment, and those for the suppression of interference in motors, etc.—should always be rated specifically for a.c. working (roughly speaking an a.c. working of 300 volts is about equivalent to a 1,000 volt d.c. rating). For such condensers, petroleum jelly or

liquid impregnants are much better than wax. Special types of condensers have been developed for electrical interference suppression, and the use of conventional types for this purpose may prove highly dangerous, as their failure can result in the outer casings of domestic appliances becoming "live".

Moulded mica condensers are still widely used for r.f. purposes, although the smaller size of the silvered mica types has made these very popular. As the power factor of either type of good quality mica condenser is low, they can handle quite high transmitter currents. Silver mica types are very stable over long periods and should therefore be used for tracking and padding in tuned circuits.

Ceramic condensers have taken over many of the tasks formerly allotted to mica condensers, except where a very high order of stability is necessary. The so-called high-permittivity (high-k) types are useful and economical for most r.f./i.f. decoupling, and similar purposes. In the low-permittivity class, deliberate use can be made of their sensitivity to temperature variation to

## CONVERSION OF 5CR522 TX

(Continued from Page 11)

should be tuned for maximum on 3rd control and then for dip on 4th control. Check on position 5 that these last two controls give maximum reading (2 ma. full scale) of grid drive and it is quite normal to send the meter hand over the scale which will do no harm.

If an r.f. indicator is fitted to the transmitter in the final enclosure, then position 4 (1 ma. full scale) will enable all controls to be peaked for maximum r.f. output.

A simple half wave dipole directly fed with 50 ohm co-ax. has given quite good results from here, but a good 5 metre S element beam should produce quite startling results.

A few tips on the transmitter would not go amiss here. The drain on the bias battery in the system shown is about 0.5 ma. and would be a good idea to install a switch to cut it when not in use.

In the original transmitter, modulation is applied to the first 832 screens as well as to the final. The quality can be improved by removing this modulation and this is done by removing the yellow lead from the junction of the two 40K resistors near the final 832 under the chassis and connecting it to pin 2 of the modulation transformer or to the unmodulated h.t. on pin 3 of the power plug. Leave the blue wire in place at the same modulation to the final 832 screens.

Many of the points in this article will be of use to anyone who is converting the transmitter for 2 metre operation also and it is very easy to arrange to have two of the transmitters going on 2 and 5 metres, both operating off a common modulator as is the case at this QTH.

I wish to thank Wal VK2MZ for the great assistance he has rendered in this conversion and it was he who did most of the hard work involved in it.

See you on Five, chaps!

## 3.5 Mc. BAND CONTEST

BY VK9

The Contest is being organised by the Council of the Papua and New Guinea Division of the W.I.A. as an effort to encourage the use of the sparsely occupied 3.5 Mc. band. No prizes are being offered for this Contest, but QSL cards will be sent by those stations contacted. As QSLs from Papua and New Guinea on 3.5 Mc. are scarce at present, it is hoped that many Amateurs will take this opportunity to acquire one of these cards.

The Contest will be run from 1st to 31st July, 1959, and will be for either phone or c.w. or both. Only one contact per station (either phone or c.w.) per day will be permitted.

provide compensation for changes which would otherwise occur in tuning circuits during warming up. There are few modern television and f.m. tuners which do not make use of this characteristic to keep frequency drift within permissible limits (admittedly, these tend to be wide by —communications standards), and correct use of such condensers can greatly reduce drift in receivers and v.f.o.s. Incidentally, even professional designers tend to determine the type of drift correction condenser required in a circuit largely by "try it and see" work on prototypes, so the Amateur need not be discouraged. By using one of the N750 (i.e. 750 part/million/degree Centigrade) types the value of this condenser can usually be kept a small proportion of the total capacity across the tuned circuit. With some ceramic condensers, excessive heat from a soldering iron can cause permanent damage.

Electrolytics have improved beyond all recognition over the years; a remarkable number of "muffs" can now be contained in a very small space, and will continue to stay there happily for many years (it is not so long since a respectable explosion in a broadcast receiver at G3VA sent the contents of an electrolytic far and wide). At least one broadcast receiver has 116  $\mu$ F. of smoothing and 300 $\mu$ F. is a common figure for television sets; a transistor receiver may have 200  $\mu$ F. across the battery. But even today it is worth remembering that the shelf or junk box life of an electrolytic is much less than that in regular service. After some months out of use, the insulation resistance falls sharply, and the condenser then requires re-forming (or re-aging as it is often called) before putting into use. Otherwise, there may easily be a blown condenser and, more likely than not, a dead rectifier valve. The usual method of re-forming a condenser is to apply the normal d.c. working voltage through a limiting 10K ohms resistor until the leakage current falls to a low figure.

Looking over these notes, it is realised that such important points as series inductance, tolerances, ripple currents, and the like, have had to be omitted; but at least we may have shown that there is more than just a couple of lines on a diagram to the modern fixed condenser, and that we can no longer ignore specified types with impunity.

\* Reprinted from R.S.G.B. "Bulletin," Nov. '58.





# DRIFT TRANSISTORS

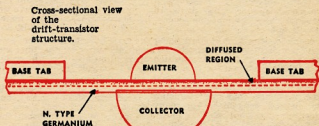
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## ABOUT THE NAME DRIFT

The word DRIFT is a well-known term in physics used to describe the motion of charged particles in ionized gases under the influence of an impressed electric field. Charged particles move much faster in a given direction by "drifting" in an electric field than they can by random diffusion in the absence of an electric field. In keeping with the analogy between the drift phenomena in gaseous discharges and in semiconductors, the word *Drift* is applied to transistors which incorporate a "built-in" accelerating field.

The electric field in drift transistors, which literally propels the charge carriers from emitter to the collector, is achieved by the graded distribution of an impurity in the germanium base region. This "built-in" accelerating field, a feature not available in conventional transistor designs, results in greatly decreased transit time and therefore a much higher upper frequency limit.



## THE DRIFT PRINCIPLE

The successful use of the drift field principle lies in the critically accurate control of impurity distribution in the base region during manufacture. The density of the impurity distribution in the base decreases exponentially from very high values at the emitter to low values at the collector. The impurity distribution introduces a constant electric drift field which accelerates (propels) the charge carriers through the base region. Compared with the performance of conventional transistors, in which the charge carriers move by means of diffusion—a comparatively slow process because of its random nature—the acceleration of charge carriers by the drift field represents a major improvement. Because of the accelerating field in drift transistors, the transit time of the charge carriers is substantially less than the transit time of the carriers in a conventional transistor. This results in greatly increased high frequency performance.

## "DRIFT" TRANSISTORS PROVIDE SUPERIOR PERFORMANCE

The high impurity density in the base near the emitter results in a *low base resistance*, while the low impurity density near the collector contributes to *low collector capacitance* and results in a high collector breakdown voltage. The extremely low value collector capacitance makes neutralization unnecessary in most applications and permits the design of simple and economical circuits.

## SHIELDING MINIMIZES INTERLEAD CAPACITANCE

The combination of low base resistance, high collector breakdown voltage, low collector capacitances, and short transit time, makes possible the design of high-power gain, high-frequency circuits with excellent operating stability and good automatic-gain control capabilities over a wide range of input signal levels.

The drift transistors described here have four flexible leads and are hermetically sealed in metal cases. The fourth lead is connected to the case internally to minimize interlead capacitance and reduce coupling to adjacent circuit components. These important design features contribute to the usefulness of drift transistors in high-frequency circuits, particularly in those industrial and commercial applications where low feedback capacitance is an important design consideration.





## DRIFT TRANSISTOR DATA CHART

TYPE	CLASS OF SERVICE	MAXIMUM OSCILLATOR FREQUENCY	TYPE	CLASS OF SERVICE	MAXIMUM OSCILLATOR FREQUENCY
2N247	RF Amplifier	132 Mc.	2N544	RF Amplifier	132 Mc.
2N274	RF Amplifier	132 Mc.	2N640	Automobile RF Amplifier	132 Mc.
2N370	RF Amplifier	132 Mc.	2N641	Automobile IF Amplifier	132 Mc.
2N371	RF Oscillator	132 Mc.	2N642	Automobile Converter	132 Mc.
2N372	RF Mixer	132 Mc.	2N643	High Speed Switch 20 Mc.	—
2N373	IF Amplifier	132 Mc.	2N644	High Speed Switch 40 Mc.	—
2N374	Converter	132 Mc.	2N645	High Speed Switch 60 Mc.	—
2N384	VHF Amplifier	250 Mc.			

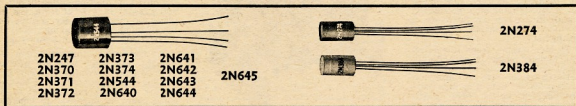
### FEATURES OF DRIFT TRANSISTORS IN HIGH-FREQUENCY APPLICATIONS

- low base resistance
- high output resistance for increased gain
- low feedback capacitance
- high alpha-cutoff frequency
- controlled input and output characteristics
- controlled power gain characteristics to insure unit-to-unit interchangeability
- rugged mechanical construction
- excellent stability
- exceptional uniformity of characteristics

### DESIGN BENEFITS INCLUDE:

- high input-circuit efficiency
- excellent high-frequency operating stability
- good signal-to-noise ratio
- good automatic-gain-control capabilities over a wide range of input-signal levels

These drift transistors are germanium p-n-p alloy-junction types which are specifically designed and controlled for operation in mass-produced electronic equipment operating at frequencies up into the vhf band.



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## GELOSO V.H.F. V.F.O.

The last few years has seen such an enormous increase in the activity on the v.h.f. bands of six metres and two metres that a v.f.o. is a necessity for the up-to-date station that expects to be in the running during the DX openings. Even for local contacts the v.f.o. will be found very useful during round table conferences or to locate yourself in a clear spot in the band when local activity is running high.

The Geloso Signal Shifter No. 4/103 will provide a neat and compact exciter unit which will cover the full two metre band (144 to 148 Mc.) with switching facilities to change to crystal control if desired. The unit will provide adequate drive to run an 832 or a 2E26 to their full ratings provided the h.t. supply does not fall below 270 volts. A power supply rated at 300 volts 80 mA. and 6.3 volts at 2.35 amps. is recommended.

An examination of the circuit in Fig. 1 will show that the 5763 is common to both crystal and v.f.o. circuits, but with either arrangement only one 6CL6 and one half of the 12AT7 is in operation at any time.

Firstly, considering the exciter with the v.f.o. The first 6CL6 consists of an oscillator doubler operating on a fundamental frequency in the 18 Mc. region and having a 210 volt regulated screen supply. The output is doubled in the plate circuit of this tube to 36 Mc.

The 36 Mc. output is capacitively coupled to one half of the 12AT7 which operates as a further doubler with a 300 volt plate supply and provides a 72 Mc. output.

The output from the 12AT7 is then capacitively coupled to the 5763 which operates into a series resonant plate circuit at 144 Mc.

With the switch in the crystal control position, the cathodes of the 6CL6 and the half of the 12AT7 previously used, are opened, and the remaining 6CL6 and the other half of the 12AT7 are brought into operation.

Although a 12 Mc. crystal is specified for the oscillator doubler, the more common 8 Mc. crystal may be substituted and the stage operated as a tripler without any further alterations or adjustments.

The 24 Mc. output from this 6CL6 oscillator doubler stage is capacitively coupled to half of the 12AT7 which is operated as a tripler with an output on 72 Mc. This 72 Mc. output is then capacitively coupled to the 5763 which operates as a doubler to 144 Mc. as before.

Facilities are provided on terminal 4 of the terminal strip to measure the drive to the 5763 doubler.

A series tuned link is provided to couple the output to the co-axial socket mounted on the rear of the chassis. Also a socket is provided at the rear of the chassis for a balanced output if desired.

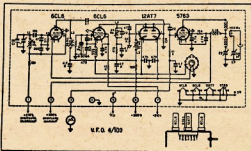
The usual quite large and handsome Geloso dial is provided to enhance the appearance of the unit. The scale,

graduated from 144 Mc. to 148 Mc., is 8 inches long, it is however not linear; at the 144 Mc. end of the band 1 inch represents 100 Kc., whereas at the 148 Mc. end of the band 3/16 inch represents 100 Kc. This of course is taken care of in the graduations. An outer linear scale in red is graduated 0-100.

The chassis is very lightly constructed and unless care is taken to mount it rigidly on a solid main chassis, trouble will be experienced with vibration effecting the frequency when v.f.o. controlled. Mechanical rigidity is important with v.f.o.s. having a fundamental frequency as high as 18 Mc.

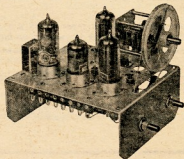
The 5763 doubler may be supplied with modulated h.t. and the exciter may then be used as a complete low power transmitter.

The unit upholds the tradition that the Geloso people have established in



providing equipment of a satisfactory standard at a reasonable price. The exciter will enable the Amateur to build a transmitter for two metres that can operate with v.f.o. or crystal control at the flick of a switch and having an appearance which should even appeal to the XYL.

We are indebted to R. H. Cunningham Pty. Ltd. for making one of these units available for test.



## SILENT KEY

It is with deep regret that we record the passing of—

VK3HT—D. G. Britt.

VK3ZBD—W. I. Dawson.

WIRELESS SETS NO. 22  
AND NO. 122

(Continued from Page 3)

(use writing paper only, not emery), clean all contacts associated with the rotary inductance, carry out modifications 1a, 1b and 1c, plus 2a and 2b if necessary. Then you will have performance equal to the best of them.

Remove all traces of oxidation from the rotary coil and wheel. Slacken the screws which hold the leaf springs and increase their tension. This causes the wheel to press more firmly on the coil.

## MECHANICAL CONSIDERATIONS

If you want to experiment further, these mechanical considerations are given as a guide.

Ease of control and finer tuning can be obtained by the following method. Remove the small knob from the frequency control and replace with one of larger diameter. This provides easier and smoother control. An alternative is to remove the knob and fit a small planetary type reduction with a suitable pointer and scale. There are several screws adjacent on the panel for mounting. This gives very fine adjustment and lots of bandspread on the scale which can be accurately calibrated. The one in use was calibrated against a 100 Kc. oscillator and 10 Kc. multivibrator. The scale is so open, it is easy to interpolate the 5 Kc. points.

Antenna terminal can be replaced with a co-axial connector.

It has been suggested that the r.f. metering transformer absorbs useful power. It is not of any great use in tuning as most Amateurs rely on p.a. plate current readings.

The r.f. metering transformer is easily shorted out by a piece of heavy gauge tinned copper wire soldered between the lead to the contact on the rear end of the rotary inductance and the transformer. This is easier, quicker and much less messy than attempting to remove the transformer.

The modifications, both electrical and physical, which can be applied to these ubiquitous little sets are limited only by the imagination, time and tenacity of purpose of the operator. It has been the object of the Committee to sift, test and present in a brief form, the main ideas for quick and easy results, bearing in mind the old saying, "You can't make a silk purse from a sow's ear."

In conclusion, here is one final thought. For those who are interested in emergency networks where it is advisable to keep equipment at least outwardly standard, the removal of drop cords could be opposed. In emergency work it is advisable for equipment to be interchangeable and the use of a multiplicity of plugs and sockets could prevent the use of equipment in certain circumstances.

This list of modifications has been made possible through the interest and co-operation of the following Amateurs: VKs 2OU, 2ACB, 2AEE, 2ASF, 3CN, 3OH, 3OM, 3PE, 3PZ, 3RN, 3UW, 3ZX, 3AAK, 3AHN, 3AJI, 3ZCB, 5EM, 5KH, 7JB, 7TT.







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# BOOK REVIEW

## "THE RADIO HANDBOOK"

The frontispiece of the fifteenth edition carries the claim: "The standard of the Field for Advanced Amateurs, Practical Radiomen, Practical Engineers, and Practical Technicians."

The previous edition contained 31 chapters on all aspects of Radio and Electronics. This edition contains no fewer than 34 chapters; the additional three chapters have been added without increasing the U.S. price. The added chapters are "High Fidelity Techniques", "Electronic Computers" and "R.F. Feedback".

The existing chapters have been completely re-written where necessary and a total of 40 new pages added. Constructional articles are short, but complete enough for experienced persons. All the equipment described has that thoroughly engineered, commercial appearance for which "Editors and Engineers" have become famous.

I will not bore you with a lengthy description of everything in this book, but I consider that some of the highlights are well worth mentioning. For some time now I have considered that a "turret tuner" from a television set could become the basis for a good amateur receiver and pages 540 to 547 contain the description of an advanced receiver using such a turret. Local Amateurs would find it hard to obtain the mechanical filters used in the second i.f. of this receiver, but crystals for cascaded half lattice type filters can be obtained and should yield very similar results.

This edition of the "Radio Handbook" also includes a number of constructional articles on specialised single band "Transceivers" in addition to the more conventional equipment.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne. Price 85/6, plus 2/- postage.

## "MOBILE RADIO TELEPHONES"

by H. N. Gant, A.M. Brit. I.R.E.

This book has been written to assist company executives in choosing the right type of equipment for v.h.f. mobile radio communications. It explains the difference between a.m. and f.m. systems and enumerates the advantages and disadvantages of each. Equipment for both the 80 and 160 megacycle bands are discussed and also the procedures necessary to obtain a licence in Great Britain. Here in Australia, of course, applications for licences are made to the P.M.G.'s Department.

Block diagrams and circuits of typical equipment are reproduced and used to describe the operation. Since the book is not intended for constructors, there is insufficient detail given for Amateurs to reproduce the equipment described. It is an excellent little publication and can be thoroughly recommended to persons contemplating the installation of a mobile radio system.

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To conclude, several pieces of handy test gear are described that will help you get the most out of your mobile station.

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Published by The Cowan Publishing Corp., New York. Price in Australia 35/- plus 1/6 postage. Our copies from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne; and The Technical Book and Magazine Co., 295 Swanston St., Melbourne.

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## TUBE AND SEMICONDUCTOR SELECTION GUIDE, 1958-59

Compiled by Th. J. Kroes

This new addition to the Philips' Technical Library is designed to enable the user of electronic tubes and semiconductors to quickly determine which tube or semiconductor is to be preferred in

different cases, to do this a series of tables are used as follows:

1. Philips' manufacturing ranges and their suitable equivalent types, giving type numbers.
2. Tubes grouped according to their most important properties.
3. Tables of types which should preferably be used in new apparatus.
4. Tables of tubes which should exclusively be used in existing apparatus.
5. Tables of tubes which may be used for replacement of obsolete tubes.
6. Descriptions of type-number systems and data of a number of tube bases.
7. Data of diodes and transistors.

Texts of the tables are printed in English only, translations of these texts in French, German and Spanish are given.

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## CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

## DUIPAR TO OPERATE AT 10th WORLD SCOUT JAMBOREE

During 17th to 26th July a special world event will take place in the Philippines—the 10th World Scout Jamboree. It will be ten days of fun and adventure in fellowship and friendship with Boy Scouts from 69 countries of the free world participating. The scene will be at the beautiful Makiling National Park in Los Banos, Laguna, about 30 miles south of Manila.

The Philippine Association for Radio Advancement (67 Espana Extension St., Quezon City, Philippines) will put up an Amateur Radio Station and operate every hour on the hour during the entire period of the Jamboree under the call sign of DUIPAR on the following bands: 80, 40, 20, 15, 10, 6 and 2 m.x.

The station DUIPAR will issue special commemorative QSL-Certificates for each and every contact established to commemorate this rare event in their country.

# AMATEUR CALL SIGNS

AMENDMENTS FOR APRIL 1959

## NEW CALL SIGNS

VK—Australian Capital Territory  
1JE—J. H. Edwards, 90 Ormond St., Turner.  
1VV—R. M. Marsden, Canberra Ave., Kingston.

New South Wales  
2BK—K. W. Jeffcoat, 180 Wellington St., Bondi.  
2PI—W. Marsh, 183 Steyne Rd., Saratoga.

2AOC—R. J. Brown, Childo St., Byron Bay.  
2ATI—J. E. Shrubbs, 33 Kingsley St., Byron Bay.  
2ATX—I. E. Huser, 47 Victoria Ave., Concord West.

2AUK—R. H. Butler, Black Forest, Bingara.  
2AYG—P. Gresser, Cr. Powderworks Rd. and Merridong Rd., Narrabeen North.

2ZBS—W. J. Stewart, 37 Cooks Av., Canterbury.  
2ZGT—G. K. Trevitt, 2 Hassans Walls Rd., Lithgow.

2ZHI—J. W. Hutchison, Flat 2, "Wombey," Edward St., Wagga.  
2ZJR—R. J. Rugz, 12 Roslyn St., New Lambton.

2ZKP—L. K. Phillips, 179 Tringate St., Granville.  
2ZMW—C. M. Wright, 11 Miowera Rd., Turramurra North.

2ZOL—O. Longfield, 53 Illawarra St., Carlton, Victoria

3OD—D. D. Watson, 54 Newcastle St., Preston.  
3ZDE—R. A. Ellis, 18 Clinrick St., Reservoir.  
3ZDX—J. McKewen, 28 Flowerdale Rd., Glen Iris.

3ZHA—A. L. Heath, Main Rd., East Eltham.  
3ZHB—W. J. Henry, 49 Kensington Ct., South Yarra.

3ZHU—P. J. Jackman, 16 Years Rd., Ashburton.  
3ZHS—C. R. Sanderson, 5 Hughenden Rd., East St. Kilda.

3ZIS—B. C. Acheril, Anzacs Rd., Mt. Macedon.  
3ZIA—S. M. Mackereith, 26 Derby St., Camberwell.

Queensland  
4ZCC—M. C. Butler, McMullen Rd., Brookfield.  
4ZDI—D. E. Laver, 28 Hicks St., Mt. Gravatt.

South Australia  
5ZDQ—E. J. Patching, 18 Golden Glow Ave., Underdale.  
5ZDR—M. J. McMahon, 25 Branksome Tce., Dover Gardens.

Western Australia  
6CW—C. C. Patchett, Pilot St., Wyalakatchem.  
6ZCA—T. H. Mosel, 31 Nelson St., Inglewood.  
6ZCE—K. J. Kosins, 29 Middleton Rd., Albany.

6ZDS—R. K. Graham, 40 Hensman Rd., South Perth.  
Territory of Papua and New Guinea  
9JR—J. Rutherford, C/o Posts and Telegraphs Department, Port Moresby.

Antarctica  
0DS—D. Smith, Macquarie Island.

## CHANGES OF ADDRESS

VK—New South Wales  
2HU—R. H. T. Yulle, 139 Mona St., Granville.  
2IG—L. J. M. Bone, 3 Warrilah St., Eastwood.

2MD—R. M. Cumming, Lot 6, Newton Rd., Blacktown.  
2MJ—A. J. T. Crisp, 58 Greenacre Rd., South Hurstville.

2OS—I. N. C. Crisp, 6 Glenroy St., Thornton.  
2OZ—W. E. Dixon, Evans Pde., Glenbrook.  
2ACW—L. R. Hawkins, 13 Allen Rd., Blacktown.

2AJC—B. J. Eve, 125 Pentecost Highway, Turramurra.  
2AMV—T. A. Meagher, 25 Bandon St., Forbes.  
2AUT—G. Taylor, C/o Mrs. Norman, 535 Canterbury Rd., Campsie.

2ZAN—T. K. N. North, 199 Stewart St., Bathurst.  
2ZCO—A. E. Cook (Mrs.), 45 Liverpool St., Cowra.

Victoria  
3GO—R. C. G. McGowan, 40 Williams Rd., Blackburn.  
3JK—J. K. Herd, Portable, "Kinta," 6 Balcombe St., Mornington.

3QY—C. W. Richardson, 1152 Nepean Highway, Cheltenham.  
3AZJ—D. G. G. Johns, 21 Nioka St., Chadstone.

Queensland  
4UN—R. J. Scott, "Anthony's Wood," Patricks Rd., Grovely.  
4ZAT—J. R. Cattle, North St., Brisbane Island.

4ZCE—K. M. McKay, Yandina Rd., Nambour.  
South Australia  
5AP—H. R. Hodgson, 29 Carroll Ave., Kilburn.

5TT—F. K. Tapley, Government Rd., Yatala Vale.  
5ZAC—K. J. Skewes, 15 Hutchinson Ave., Risdon Park, Port Pirie.

Western Australia  
6HK—D. E. Graham, Lot 920, Purdon Rd., Wembley Downs.

6KV—D. T. Lyle, Flat 3, 10 Smith St., Highgate.  
6RO—B. J. Sorley, 40 Williams Rd., Hollywood.

6SK—A. A. Skinner, 104 Addis St., Kalgourlie.  
6ZBA—J. R. Bartlett, 2 Queens Cres., Mt. Lawley.

Tasmania  
7ZAG—W. G. Grewling, 4 Mimosa Court, Berriedale.

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#



way and KH6DF. 4PU collared a JA8. Congrats 4NG on coming "top dog" in VK4 in Ross Hull Contest. Believe 4NG has a KA7 QSL in his shack now.—AZBI.

**North Queensland.**—Six has just started to fade for the autumn season. So far I have had over 1,250 contacts for about 350 different call signs. Last JA sign heard here June 3. They are now weak and heavily affected by QSB. The KH8s were still coming in up to May 16 with some very good contacts. Most surprising incident during May was a half hour 5 x 9 QSO with Russ 8XK on May 10 at 1320 E.A.S.T. Also heard on the same day between 1040-1200 E.A.S.T. were 2HE, 2ZCF and 2ZAC. With all my efforts they refused to be worked. Signals were from 56 to 59 all the time, but one by one they QRT and nothing further was heard from VK2 or other areas.

Bob 4RW has at last made his appearance on 6 mhz with a 22B, 10w, 4 el. yagi outfit. Bob has had a few contacts on 6 with JA and also managed to get one with KH6CT. The JAs have broken into their 8s season now and it is hard to get a contact. KR6MD has hit the ether in Okinawa and KR6AK is all set to go home to U.S.A. There is an FK3 station on the air now but as yet no contacts with him.

His freqs. are 50.00, 50.25, 50.75 and 50.85. Radio Peking seems to come through strongly on 50.8 and also another f. station on 49.7. 4ZBW has been transferred to Darwin and promises to be operating soon, now there will be a 2 station in the Northern Territory at last. 4ZBJ has been told of a transfer from Atherton to Brandon, a bit closer to this QTH, so we hope for increased activity.

**1st Mc.**—At last the "2" barrier has been cracked between the Towers and Townsville with 4LK and 4ZAK doing the honours. General tendency is for the "9" sig to be far above the "6" sig in strength, also it remains more constant in strength, six has some very bad fades. 4LK is using an S32 final and a 10 el. yagi. 4ZAK is using a 322 with a 10 el. yagi also. 4ZBW is using his 50 Mc. tx for local contacts on 144 Mc. but could not make the "Towers".—AZBE.

#### SOUTH AUSTRALIA

Most activity for the month has been on 288 Mc. Gary 5ZGH has very nice modulation on 288 Mc. for a mod. osc. George 5GB has the nicest 1 mhz signal that I have ever heard. Harry 5ZBZ has his 12AT7 transceiver going nicely, and has had several crossband contacts with 4L 5ZCR, 288 to 50 Mc. Vic 5JH has been mobile most week-ends with trips to Sellicks Hill and Bumbunga Hill. Signals received in the city from Vic have varied from 5 and 5 to 9, very nice going for a distance of 80 miles with mod. osc. and super regen.

Graham 5ZAP is getting some gear together for xtal control on 288 Mc. starting on the 12. George 5GB, when he is on, runs a cool 100w. to his 5ZBZ on this band, a beautiful xtal signal George. Bill 5ZAX has beaten the gun in this Division with his t.v. transmissions on 288 Mc. I haven't the details of Bill's gear yet, but know that he intends feeding the signal into a 32 el. beam. I also understand that Keith 5MT has built a 288 Mc. converter for his t.v. rx and that Sid 5BE and Clem 5GL have done likewise. Wish I had a t.v. rx to monitor your signal Bill. Al 5ZCR is also interested in t.v. and is building a rx using a 5B21.

The final fox hunt for this season was a combined effort on 288 and 50 Mc. Eight mobiles took part on 288 and three on 50 Mc. The hunt was enjoyed by all participants with Brian 5ZBI winning the 288 division and Hughie 5BC winning the 50 Mc.

50 Mc. has been very quiet with only one break through and that to VK4. John 5ZDL does a regular re-broadcast of the 5WI session on Sunday mornings, with transmissions on 288 and 50 Mc. Mick 5ZDR re-organizes his gear and putting everything into a rack. He is also v.L.o. controlled. Bill 5WR has just received his 80 Mc. tx from 4L 5ZBJ and should be on the air shortly. Bill has been listening on 50 Mc. for some time. 5NO situated at Elizabeth has almost completed his 50 Mc. gear. He will be running 150w. using his present rotatable G4ZU with parasitic elements for 90 Mc. Don 5TM also of Elizabeth is erecting a beam and should have it up by now.

John 5ZJM will shortly be mobile 80 Mc. in VK3. He has converted a taxi tx and his freq. is 10.4. Pat 5ZDR paid VK3 a visit recently and did the rounds of the various shacks, our worthy V.H.F. President, Al, playing host most of the time.

The V.H.F. Section held a demonstration of the D.M.E. equipment used by the Dept. of Civil Aviation. There was quite a good attendance, the boys being over-awed by the osc. used and the power it was running as well as the natty tuning condenser in the grid lines to control the frequency.—5ZAW.

#### WESTERN AUSTRALIA

June has been a very quiet month from the DX angle—several JA openings, but signals subject to very heavy QSB and openings very short. So far there has been no sign of any opening into ZS, and I feel that no such opening will likely occur. It appears that the ZL reflections in an East-West direction cover a very narrow area of territory (sea?) and Africa is missed entirely (note our working VK9 on F2 but no VK4, and last year's openings to ZL1 and 2 but no 3s and 4s).

Activity, generally, here has dropped considerably—the most active stations being 6BD, 6ZBZ, 6ZBY, 6HK (glad to see you back on the air, Don), 6BE, 6ZBG, 6ZBC, 6ZBX has re-appeared after a long absence—beam building. Russ has demonstrated that the ZL Special really works on 6. Jack 6ZBU has now shed his "Z" and is 6BU. Jack has been heard trying his wings on 40 and 80, but still conducts his nightly sessions with 6GB.

Keith 6KH was at the last fox hunt. He will probably be moving to Mosman Park in the near future (more QRM, Roy!). Talking of fox hunts, Wally 6ZAA ran the last one. Modesty forbids any mention of the winners, but Mrs. 6ZAV finished up receiving the prize.

Another re-arrival in the city is Ron 6FM. Ron is settling back into his old home at Applecross and should be back on the breeze before long. Mobilers 6BO, 6ZCB and 6ZAA may be heard frequently running 50 Mc. mobile; Rolo has done two trips to the south west operating mobile each way and has had quite a deal of success, especially as Bob 6ZBY is believably placed en route.

We believe Rolo has received that JA9 card and can now apply for his A.J.D. (50 Mc.) which he has worked about six times over. This will be the second award for VK6 with two or three other chaps still awaiting QSLs. Others will be waiting for the spring openings to complete the award. Better make the most of it, chaps, it may be the first and last time in history that this award is possible on 50 Mc! The beacon has ticked up some 600 or so hours but, since VK9, there have been no further reports. The writer intends to make an all out effort during September/October to work these conditions which have been or been heard by VK6, i.e. DUL, VU2 and possibly KR6 and VS6. These should be certainties, but so far seem to have missed out.—5BE.

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Earlwood, N.S.W. 2243.  
Phone: NW 4248.

Just a thought. These remarks are mostly concerning the bands used for DX purposes.

We all know that the Law of the Land permits phone and c.w. to be used in any part of these bands. Now, that is OK from the official point of view, but as one of those who is crushed into these narrow limits it seems to me that if each of us was to abide by the "Gentleman's Agreement" which has been in operation for many years things would be more comfortable for all.

Reports support my observation that there is a growing amount of phone appearing from the VK gang in the c.w. section of each band. I appeal to these fellows to move up a little in frequency and to separate the phone from the c.w. Of course the c.w. man has no legal right to the lower few kc. of each band—it is the "Gentleman's Agreement"—but it does help the majority when the going is tough in overcrowded bands.

Perhaps some of the newer chaps didn't know about the agreement, and perhaps some of the not-so-active old-timers had forgotten it. How about it, fellas.

Just a few lines in support of the a.w.l. DX men. I would like it to be known that much of the news on this page is phoned on to me by the DX Group, especially those in N.S.W. and Victoria. Often their reports give additional support to news and comments by licensed operators. A cross section of all reports make it possible to pass on reliable information concerning band activities, QTH, etc. Some of the listeners feel they are losing publicity (Especially dropping the a.w.l. column in "A.R.") [This month it has been restarted after another volunteer to write the notes has been obtained—Editor.] This is bad. While in some parts to lack of organisation on their part, I would like to see more encouragement given them by the staff of the paper. They have given strength to the W.I.A. membership and from their ranks many new Amateurs are born.

## NEWS AND NOTES

There is a possibility of VK2BV making a trip to Portuguese Timor in the near future. It all depends upon whether the necessary equipment can be made available. He said he can open up from CS10 within 3 or 4 weeks after equipment is operational. Anyone interested can contact Ray on 21 Mc. phone, where he is quite active, or write him direct to: R. C. Howland, C/o C.A. Mess, Darwin, Northern Territory, Australia.

WB2B and IZFF are working out plans for a DX-pedition to Nepal during mid-August. They will depart for CS10 within 3 or 4 weeks after equipment is operational. Anyone interested can contact Ray on 21 Mc. phone, where he is quite active, or write him direct to: R. C. Howland, C/o C.A. Mess, Darwin, Northern Territory, Australia.

HLKJ is genuine and is working phone most of the time and some c.w., 14 and 21 Mc. are used.

WIAW and VQ9ERR will make a trip to the Seychelles as VQ9ERR and should be on the air about 22nd August, 14 and 21 Mc. will be used. The stations will be fairly high powered.

DLSP, DLKRB and DJ2MD will operate from Andorra from July 20 through to 30. c.w. only, 24-hours-day, and all bands.

Afghanistan: YAIUW is reported to be working on 21 Mc. s.a.b. daily, and YAIAP is currently on 21 Mc. a.m.

WSPVH will be active from Pakistan in the near future. His license application has been approved and he hopes his call sign will be either AF4 or AF5.

Two Lima—KAOJ and KAOIM, s.a.b. may be found on 14 Mc. daily commencing about 1200z.

CRADJ is active from Portuguese Guinea. He is using 100 watts.

The installation crew now in Nepal includes four Amateurs. None are believed to be hot DX'ers but the King has given permission to operate Amateur stations. Both phone and c.w. will be used on 10 and 20 mcs.

\* Call signs and prefixes worked.  
\* zero time—GMT.

V54JT is active from Sarawak on s.a.b. and c.w. on the 14 Mc. band. Listen for him between 0900 and 1200z.

VF6VY is crystal controlled on 14100 Kc. and is very active around 1200z.

MP4BWW's tentative plans for his s.a.b. DX-pedition are: MP4QAN, Qatar, July 16 to 18. LU2CZ currently active on 14 Mc., is in the South Shetland Islands. There has been some misunderstanding about his QTH which gives it as "Antarctic." This is not the case for DXCC purposes, it is South Shetland Islands.

It is understood that EA2CA now has permission for s.a.b. operation from Hail.

VX8MR, Maldiva Islands, is temporarily off the air due to a burnt out transformer in the t.x. A replacement is expected any time now.

CR7BS is a club station in Mozambique. They are now working s.a.b. on 14 Mc. with low power, but hope to boost their signal soon by the addition of a linear amplifier.

Poland's first s.a.b. station, SP8PL, is now operating 10 through 80 mcs with about 150w. His XYL's call sign is SP8SQ.

Jack-Jayden, who is active from this location during 1959 and 1960, according to LA6CF. He is investigating the possibility of getting up there in 1961 for a few weeks DX-pedition.

YAIAP, Afghanistan, is fairly active on 14 Mc. phone between 1400 and 1600z. (WBESY) Asaland Island—OHEED, with OH5QC and OHND plan to operate as OHABD/R or OHXQ/SL on August 7 to 16. OHXND is XYL of OH5QC.

...CE0AC, Easter Island, is now active Wednesday and Sundays from 1215 to 0300z. WSL via CE3HL or the R.C.C.H.

Franz Josefian will be put on the DX map by UA1CK on all bands during mid-August.

VF6VY will be the call used by VEZABE and VE2JC while on a visit to St. Pierre Island, 14 Mc. c.w. and phone will be used. Time, late June and early July.

WHTTI, in a letter to 2EG, says, "My Buddy, KJ5GQ/FPBAB will be operating from St. Pierre and Miquelon during the first few weeks of July. He hopes to have s.a.b. in addition to a.m. and c.w." WHTTI is also FP8AR. He expects to be back on St. Pierre is during first half of September. Will be operating on c.w. and a.m.

IZIFF will probably be active as HV1CN, Vatican City, in July. He intends using s.a.b., a.m. and c.w.

VRIB would like to work as many VKs as possible. He operates on all bands, 3.5 through 28 Mc. It is known that he would appreciate a fair go by air go to the DX hungry QSO busters from other places, if they would wait until each contact is finished.

## ADDRESSES

FR7AI—Paul Canavy, Rue des Remparts, Cayenne, French Guiana.  
9G1CF—Dun Bar of Granville, Box 4, Winneba, Ghana.

V59AE—Dunbar, V-4 Bandar Sheikh, Little Aden, Aden.

V59AB—Major G. R. K. Lyon, Armoured Car, San, Aden Protectorate Levies, B.F.P.O. 69, Aden.

EABCM—J. M. de la Vega Artich, la Transversal de la Salle, 31, Santa Cruz de

ZB1NE—4193257 S.A.C., N. B. Rivett, Air Radio Section, R.A.F., Ta-Kali, Malta.

ZB2Z—R. W. Bush, Room 1, "C" Block, R.A.F., New Camp, Ceylon.

HK7AB—H. McCormick, P.O. Box 216, Bucaramanga, Colombia.

OD5CI—C/o U.S. Embassy, Beirut, Lebanon.

VIAB—G. Vernardakis, 3 Erythrae St., Peristeri, Athens, Greece.

ZC4RL—N. J. Jones, Forces Broadcasting Service, B.F.P.O. 53, Cyprus.

VF8EG—QSL via G8KS, Holwood Park Ave., Farnborough, Kent, England, or via R-2-B.

ST2KO—P.O. Box 30, Khartoum North, Sudan.

ZET7I—H. B. Helm, P.O. Box 272, Sinoia, St. Rhodessa.

HK3RJ—Jorge Reynolds, Apartado Aereo 83-36, Bogota, Colombia.

ZC1RP—S. J. Butlin, 148 Yew Tree Lane, Sth. Yaxley, Birmingham 16, England.

CE9AB—QSL via W1RH, 147 Glenwood Av., Boston 35, Mass.

EL4A—QSL via W1PHO, 1648 Normandy, St. Louis, Mo., U.S.A.

EA0AF—Box 135, Fernando Poo, Spanish Guinea. (ZQL)

3AS3C—QSL via ON4QX. (ZQL)

FM7WU—H. Fontaine, P.O. Box 61, Port de France, Martinique. (BERS196)

OQ3JR—Bob Chenier, P.O. Box 27, Shinkolobwe, Belgian Congo.

W3CTN is QSL Manager for J20DA.

Anybody unable to extract a card from ZD3G to date may find a try via WZ2GB worthwhile.

## QSL RECEIVED

2A1H—JT1AA, J81, ZJ0PB, OQ5AO, UR1KAE, ZE2JA.

2AMB—IT2VB, FB8XX, OQ5HU, VR1B, VS1FJ, VZ1GZ.

2QL—EA5AM, ET2VB, H5E8E, ST2KO, T21LA, VF2LU, VP8EP, SV08RE, 4X1AO, 4STFJ.

13965—BV1UJ, PH1J, VY5ABC.

BERS196—ET2UB, FM7WU, G3CNC, KX6CO, OQ5HU, ZY2KT, U41FJ, UR2UB, VU, ZAY/LH, VK2FZ/LH, VK3GJ, VQ6AB.

VR1B, VR2DE, ZC4FN, XV5A, 4XF4U.

## ACTIVITIES

7 Mc. C.w.—3A0M\*, UP2N\*, BERS196: DM2AB, DU7V, E1SS, ET2US, G3EYN, G3BAWR, HA5KQD, LA7X, LZ2SK, OK3KMY, ON4JB, SM3KH, SP8QH, UA1QK, UA0FT, UB3CW, UG1W, UG2W, UG3W, UG4W, UG5W, UG6W, UG7W, UG8W, UG9W, UG10W, UG11W, UG12W, UG13W, UG14W, UG15W, UG16W, UG17W, UG18W, UG19W, UG20W, UG21W, UG22W, UG23W, UG24W, UG25W, UG26W, UG27W, UG28W, UG29W, UG30W, UG31W, UG32W, UG33W, UG34W, UG35W, UG36W, UG37W, UG38W, UG39W, UG40W, UG41W, UG42W, UG43W, UG44W, UG45W, UG46W, UG47W, UG48W, UG49W, UG50W, UG51W, UG52W, UG53W, UG54W, UG55W, UG56W, UG57W, UG58W, UG59W, UG60W, UG61W, UG62W, UG63W, UG64W, UG65W, UG66W, UG67W, UG68W, UG69W, UG70W, UG71W, UG72W, UG73W, UG74W, UG75W, UG76W, UG77W, UG78W, UG79W, UG80W, UG81W, UG82W, UG83W, UG84W, UG85W, UG86W, UG87W, UG88W, UG89W, UG90W, UG91W, UG92W, UG93W, UG94W, UG95W, UG96W, UG97W, UG98W, UG99W, UG100W.

14 Mc. C.w.—2AMB: CN8B\*, KM8BL\*, KC8TH\*, LU8AA\*, LU8AB\*, LU8AC\*, LU8AD\*, LU8AE\*, LU8AF\*, LU8AG\*, LU8AH\*, LU8AI\*, LU8AJ\*, LU8AK\*, LU8AL\*, LU8AM\*, LU8AN\*, LU8AO\*, LU8AP\*, LU8AQ\*, LU8AR\*, LU8AS\*, LU8AT\*, LU8AU\*, LU8AV\*, LU8AW\*, LU8AX\*, LU8AY\*, LU8AZ\*, LU8BA\*, LU8BB\*, LU8BC\*, LU8BD\*, LU8BE\*, LU8BF\*, LU8BG\*, LU8BH\*, LU8BI\*, LU8BJ\*, LU8BK\*, LU8BL\*, LU8BM\*, LU8BN\*, LU8BO\*, LU8BP\*, LU8BQ\*, LU8BR\*, LU8BS\*, LU8BT\*, LU8BU\*, LU8BV\*, LU8BW\*, LU8BX\*, LU8BY\*, LU8BZ\*, LU8CA\*, LU8CB\*, LU8CC\*, LU8CD\*, LU8CE\*, LU8CF\*, LU8CG\*, LU8CH\*, LU8CI\*, LU8CJ\*, LU8CK\*, LU8CL\*, LU8CM\*, LU8CN\*, LU8CO\*, LU8CP\*, LU8CQ\*, LU8CR\*, LU8CS\*, LU8CT\*, LU8CU\*, LU8CV\*, LU8CW\*, LU8CX\*, LU8CY\*, LU8CZ\*, LU8DA\*, LU8DB\*, LU8DC\*, LU8DD\*, LU8DE\*, LU8DF\*, LU8DG\*, LU8DH\*, LU8DI\*, LU8DJ\*, LU8DK\*, LU8DL\*, LU8DM\*, LU8DN\*, LU8DO\*, LU8DP\*, LU8DQ\*, LU8DR\*, LU8DS\*, LU8DT\*, LU8DU\*, LU8DV\*, LU8DW\*, LU8DX\*, LU8DY\*, LU8DZ\*, LU8EA\*, LU8EB\*, LU8EC\*, LU8ED\*, LU8EE\*, LU8EF\*, LU8EG\*, LU8EH\*, LU8EI\*, LU8EJ\*, LU8EK\*, LU8EL\*, LU8EM\*, LU8EN\*, LU8EO\*, LU8EP\*, LU8EQ\*, LU8ER\*, LU8ES\*, LU8ET\*, LU8EU\*, LU8EV\*, LU8EW\*, LU8EX\*, LU8EY\*, LU8EZ\*, LU8FA\*, LU8FB\*, LU8FC\*, LU8FD\*, LU8FE\*, LU8FF\*, LU8FG\*, LU8FH\*, LU8FI\*, LU8FJ\*, LU8FK\*, LU8FL\*, LU8FM\*, LU8FN\*, LU8FO\*, LU8FP\*, LU8FQ\*, LU8FR\*, LU8FS\*, LU8FT\*, LU8FU\*, LU8FV\*, LU8FW\*, LU8FX\*, LU8FY\*, LU8FZ\*, LU8GA\*, LU8GB\*, LU8GC\*, LU8GD\*, LU8GE\*, LU8GF\*, LU8GG\*, LU8GH\*, LU8GI\*, LU8GJ\*, LU8GK\*, LU8GL\*, LU8GM\*, LU8GN\*, LU8GO\*, LU8GP\*, LU8GQ\*, LU8GR\*, LU8GS\*, LU8GT\*, LU8GU\*, LU8GV\*, LU8GW\*, LU8GX\*, LU8GY\*, LU8GZ\*, LU8HA\*, LU8HB\*, LU8HC\*, LU8HD\*, LU8HE\*, LU8HF\*, LU8HG\*, LU8HH\*, LU8HI\*, LU8HJ\*, LU8HK\*, LU8HL\*, LU8HM\*, LU8HN\*, LU8HO\*, LU8HP\*, LU8HQ\*, LU8HR\*, LU8HS\*, LU8HT\*, LU8HU\*, LU8HV\*, LU8HW\*, LU8HX\*, LU8HY\*, LU8HZ\*, LU8IA\*, LU8IB\*, LU8IC\*, LU8ID\*, LU8IE\*, LU8IF\*, LU8IG\*, LU8IH\*, LU8IJ\*, LU8IK\*, LU8IL\*, LU8IM\*, LU8IN\*, LU8IO\*, LU8IP\*, LU8IQ\*, LU8IR\*, LU8IS\*, LU8IT\*, LU8IU\*, LU8IV\*, LU8IW\*, LU8IX\*, LU8IY\*, LU8IZ\*, LU8JA\*, LU8JB\*, LU8JC\*, LU8JD\*, LU8JE\*, LU8JF\*, LU8JG\*, LU8JH\*, LU8JI\*, LU8JJ\*, LU8JK\*, LU8JL\*, LU8JM\*, LU8JN\*, LU8JO\*, LU8JP\*, LU8JQ\*, LU8JR\*, LU8JS\*, LU8JT\*, LU8JU\*, LU8JV\*, LU8JW\*, LU8JX\*, LU8JY\*, LU8JZ\*, LU8KA\*, LU8KB\*, LU8KC\*, LU8KD\*, LU8KE\*, LU8KF\*, LU8KG\*, LU8KH\*, LU8KI\*, LU8KJ\*, LU8KL\*, LU8KM\*, LU8KN\*, LU8KO\*, LU8KP\*, LU8KQ\*, LU8KR\*, LU8KS\*, LU8KT\*, LU8KU\*, LU8KV\*, LU8KW\*, LU8KX\*, LU8KY\*, LU8KZ\*, LU8LA\*, LU8LB\*, LU8LC\*, LU8LD\*, LU8LE\*, LU8LF\*, LU8LG\*, LU8LH\*, LU8LI\*, LU8LJ\*, LU8LK\*, LU8LL\*, LU8LM\*, LU8LN\*, LU8LO\*, LU8LP\*, LU8LQ\*, LU8LR\*, LU8LS\*, LU8LT\*, LU8LU\*, LU8LV\*, LU8LW\*, LU8LX\*, LU8LY\*, LU8LZ\*, LU8MA\*, LU8MB\*, LU8MC\*, LU8MD\*, LU8ME\*, LU8MF\*, LU8MG\*, LU8MH\*, LU8MI\*, LU8MJ\*, LU8MK\*, LU8ML\*, LU8MN\*, LU8MO\*, LU8MP\*, LU8MQ\*, LU8MR\*, LU8MS\*, LU8MT\*, LU8MU\*, LU8MV\*, LU8MW\*, LU8MX\*, LU8MY\*, LU8MZ\*, LU8NA\*, LU8NB\*, LU8NC\*, LU8ND\*, LU8NE\*, LU8NF\*, LU8NG\*, LU8NH\*, LU8NI\*, LU8NJ\*, LU8NK\*, LU8NL\*, LU8NM\*, LU8NO\*, LU8NP\*, LU8NQ\*, LU8NR\*, LU8NS\*, LU8NT\*, LU8NU\*, LU8NV\*, LU8NW\*, LU8NX\*, LU8NY\*, LU8NZ\*, LU8OA\*, LU8OB\*, LU8OC\*, LU8OD\*, LU8OE\*, LU8OF\*, LU8OG\*, LU8OH\*, LU8OI\*, LU8OJ\*, LU8OK\*, LU8OL\*, LU8OM\*, LU8ON\*, LU8OO\*, LU8OP\*, LU8OQ\*, LU8OR\*, LU8OS\*, LU8OT\*, LU8OU\*, LU8OV\*, LU8OW\*, LU8OX\*, LU8OY\*, LU8OZ\*, LU8PA\*, LU8PB\*, LU8PC\*, LU8PD\*, LU8PE\*, LU8PF\*, LU8PG\*, LU8PH\*, LU8PI\*, LU8PJ\*, LU8PK\*, LU8PL\*, LU8PM\*, LU8PN\*, LU8PO\*, LU8PP\*, LU8PQ\*, LU8PR\*, LU8PS\*, LU8PT\*, LU8PU\*, LU8PV\*, LU8PW\*, LU8PX\*, LU8PY\*, LU8PZ\*, LU8QA\*, LU8QB\*, LU8QC\*, LU8QD\*, LU8QE\*, LU8QF\*, LU8QG\*, LU8QH\*, LU8QI\*, LU8QJ\*, LU8QK\*, LU8QL\*, LU8QM\*, LU8QN\*, LU8QO\*, LU8QP\*, LU8QQ\*, LU8QR\*, LU8QS\*, LU8QT\*, LU8QU\*, LU8QV\*, LU8QW\*, LU8QX\*, LU8QY\*, LU8QZ\*, LU8RA\*, LU8RB\*, LU8RC\*, LU8RD\*, LU8RE\*, LU8RF\*, LU8RG\*, LU8RH\*, LU8RI\*, LU8RJ\*, LU8RK\*, LU8RL\*, LU8RM\*, LU8RN\*, LU8RO\*, LU8RP\*, LU8RQ\*, LU8RR\*, LU8RS\*, LU8RT\*, LU8RU\*, LU8RV\*, LU8RW\*, LU8RX\*, LU8RY\*, LU8RZ\*, LU8SA\*, LU8SB\*, LU8SC\*, LU8SD\*, LU8SE\*, LU8SF\*, LU8SG\*, LU8SH\*, LU8SI\*, LU8SJ\*, LU8SK\*, LU8SL\*, LU8SM\*, LU8SN\*, LU8SO\*, LU8SP\*, LU8SQ\*, LU8SR\*, LU8SS\*, LU8ST\*, LU8SU\*, LU8SV\*, LU8SW\*, LU8SX\*, LU8SY\*, LU8SZ\*, LU8TA\*, LU8TB\*, LU8TC\*, LU8TD\*, LU8TE\*, LU8TF\*, LU8TG\*, LU8TH\*, LU8TI\*, LU8TJ\*, LU8TK\*, LU8TL\*, LU8TM\*, LU8TN\*, LU8TO\*, LU8TP\*, LU8TQ\*, LU8TR\*, LU8TS\*, LU8TT\*, LU8TU\*, LU8TV\*, LU8TW\*, LU8TX\*, LU8TY\*, LU8TZ\*, LU8UA\*, LU8UB\*, LU8UC\*, LU8UD\*, LU8UE\*, LU8UF\*, LU8UG\*, LU8UH\*, LU8UI\*, LU8UJ\*, LU8UK\*, LU8UL\*, LU8UM\*, LU8UN\*, LU8UO\*, LU8UP\*, LU8UQ\*, LU8UR\*, LU8US\*, LU8UT\*, LU8UU\*, LU8UV\*, LU8UW\*, LU8UX\*, LU8UY\*, LU8UZ\*, LU8VA\*, LU8VB\*, LU8VC\*, LU8VD\*, LU8VE\*, LU8VF\*, LU8VG\*, LU8VH\*, LU8VI\*, LU8VJ\*, LU8VK\*, LU8VL\*, LU8VM\*, LU8VN\*, LU8VO\*, LU8VP\*, LU8VQ\*, LU8VR\*, LU8VS\*, LU8VT\*, LU8VU\*, LU8VV\*, LU8VW\*, LU8VX\*, LU8VY\*, LU8VZ\*, LU8WA\*, LU8WB\*, LU8WC\*, LU8WD\*, LU8WE\*, LU8WF\*, LU8WG\*, LU8WH\*, LU8WI\*, LU8WJ\*, LU8WK\*, LU8WL\*, LU8WM\*, LU8WN\*, LU8WO\*, LU8WP\*, LU8WQ\*, LU8WR\*, LU8WS\*, LU8WT\*, LU8WU\*, LU8WV\*, LU8WW\*, LU8WX\*, LU8WY\*, LU8WZ\*, LU8XA\*, LU8XB\*, LU8XC\*, LU8XD\*, LU8XE\*, LU8XF\*, LU8XG\*, LU8XH\*, LU8XI\*, LU8XJ\*, LU8XK\*, LU8XL\*, LU8XM\*, LU8XN\*, LU8XO\*, LU8XP\*, LU8XQ\*, LU8XR\*, LU8XS\*, LU8XT\*, LU8XU\*, LU8XV\*, LU8XW\*, LU8XX\*, LU8XY\*, LU8XZ\*, LU8YA\*, LU8YB\*, LU8YC\*, LU8YD\*, LU8YE\*, LU8YF\*, LU8YG\*, LU8YH\*, LU8YI\*, LU8YJ\*, LU8YK\*, LU8YL\*, LU8YM\*, LU8YN\*, LU8YO\*, LU8YP\*, LU8YQ\*, LU8YR\*, LU8YS\*, LU8YT\*, LU8YU\*, LU8YV\*, LU8YW\*, LU8YX\*, LU8YY\*, LU8YZ\*, LU8ZA\*, LU8ZB\*, LU8ZC\*, LU8ZD\*, LU8ZE\*, LU8ZF\*, LU8ZG\*, LU8ZH\*, LU8ZI\*, LU8ZJ\*, LU8ZK\*, LU8ZL\*, LU8ZM\*, LU8ZN\*, LU8ZO\*, LU8ZP\*, LU8ZQ\*, LU8ZR\*, LU8ZS\*, LU8ZT\*, LU8ZU\*, LU8ZV\*, LU8ZW\*, LU8ZX\*, LU8ZY\*, LU8ZZ.

14 Mc. Phone—2AMB: CN8B\*, KM8BL\*, KC8TH\*, LU8AA\*, LU8AB\*, LU8AC\*, LU8AD\*, LU8AE\*, LU8AF\*, LU8AG\*, LU8AH\*, LU8AI\*, LU8AJ\*, LU8AK\*, LU8AL\*, LU8AM\*, LU8AN\*, LU8AO\*, LU8AP\*, LU8AQ\*, LU8AR\*, LU8AS\*, LU8AT\*, LU8AU\*, LU8AV\*, LU8AW\*, LU8AX\*, LU8AY\*, LU8AZ\*, LU8BA\*, LU8BB\*, LU8BC\*, LU8BD\*, LU8BE\*, LU8BF\*, LU8BG\*, LU8BH\*, LU8BI\*, LU8BJ\*, LU8BK\*, LU8BL\*, LU8BM\*, LU8BN\*, LU8BO\*, LU8BP\*, LU8BQ\*, LU8BR\*, LU8BS\*, LU8BT\*, LU8BU\*, LU8BV\*, LU8BW\*, LU8BX\*, LU8BY\*, LU8BZ\*, LU8CA\*, LU8CB\*, LU8CC\*, LU8CD\*, LU8CE\*, LU8CF\*, LU8CG\*, LU8CH\*, LU8CI\*, LU8CJ\*, LU8CK\*, LU8CL\*, LU8CM\*, LU8CN\*, LU8CO\*, LU8CP\*, LU8CQ\*, LU8CR\*, LU8CS\*, LU8CT\*, LU8CU\*, LU8CV\*, LU8CW\*, LU8CX\*, LU8CY\*, LU8CZ\*, LU8DA\*, LU8DB\*, LU8DC\*, LU8DD\*, LU8DE\*, LU8DF\*, LU8DG\*, LU8DH\*, LU8DI\*, LU8DJ\*, LU8DK\*, LU8DL\*, LU8DM\*, LU8DN\*, LU8DO\*, LU8DP\*, LU8DQ\*, LU8DR\*, LU8DS\*, LU8DT\*, LU8DU\*, LU8DV\*, LU8DW\*, LU8DX\*, LU8DY\*, LU8DZ\*, LU8EA\*, LU8EB\*, LU8EC\*, LU8ED\*, LU8EE\*, LU8EF\*, LU8EG\*, LU8EH\*, LU8EI\*, LU8EJ\*, LU8EK\*, LU8EL\*, LU8EM\*, LU8EN\*, LU8EO\*, LU8EP\*, LU8EQ\*, LU8ER\*, LU8ES\*, LU8ET\*, LU8EU\*, LU8EV\*, LU8EW\*, LU8EX\*, LU8EY\*, LU8EZ\*, LU8FA\*, LU8FB\*, LU8FC\*, LU8FD\*, LU8FE\*, LU8FF\*, LU8FG\*, LU8FH\*, LU8FI\*, LU8FJ\*, LU8FK\*, LU8FL\*, LU8FM\*, LU8FN\*, LU8FO\*, LU8FP\*, LU8FQ\*, LU8FR\*, LU8FS\*, LU8FT\*, LU8FU\*, LU8FV\*, LU8FW\*, LU8FX\*, LU8FY\*, LU8FZ\*, LU8GA\*, LU8GB\*, LU8GC\*, LU8GD\*, LU8GE\*, LU8GF\*, LU8GG\*, LU8GH\*, LU8GI\*, LU8GJ\*, LU8GK\*, LU8GL\*, LU8GM\*, LU8GN\*, LU8GO\*, LU8GP\*, LU8GQ\*, LU8GR\*, LU8GS\*, LU8GT\*, LU8GU\*, LU8GV\*, LU8GW\*, LU8GX\*, LU8GY\*, LU8GZ\*, LU8HA\*, LU8HB\*, LU8HC\*, LU8HD\*, LU8HE\*, LU8HF\*, LU8HG\*, LU8HH\*, LU8HI\*, LU8HJ\*, LU8HK\*, LU8HL\*, LU8HM\*, LU8HN\*, LU8HO\*, LU8HP\*, LU8HQ\*, LU8HR\*, LU8HS\*, LU8HT\*, LU8HU\*, LU8HV\*, LU8HW\*, LU8HX\*, LU8HY\*, LU8HZ\*, LU8IA\*, LU8IB\*, LU8IC\*, LU8ID\*, LU8IE\*, LU8IF\*, LU8IG\*, LU8IH\*, LU8IJ\*, LU8IK\*, 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LU8VJ\*, LU8VK\*, LU8VL\*, LU8VM\*, LU8VN\*, LU8VO\*, LU8VP\*, LU8VQ\*, LU8VR\*, LU8VS\*, LU8VT\*, LU8VU\*, LU8VV\*, LU8VW\*, LU8VX\*, LU8VY\*, LU8VZ\*, LU8WA\*, LU8WB\*, LU8WC\*, LU8WD\*, LU8WE\*, LU8WF\*, LU8WG\*, LU8WH\*, LU8WI\*, LU8WJ\*, LU8WK\*, LU8WL\*, LU8WM\*, LU8WN\*, LU8WO\*, LU8WP\*, LU8WQ\*, LU8WR\*, LU8WS\*, LU8WT\*, LU8WU\*, LU8WV\*, LU8WW\*, LU8WX\*, LU8WY\*, LU8WZ\*, LU8XA\*, LU8XB\*, LU8XC\*, LU8XD\*, LU8XE\*, LU8XF\*, LU8XG\*, LU8XH\*, LU8XI\*, LU8XJ\*, LU8XK\*, LU8XL\*, LU8XM\*, LU8XN\*, LU8XO\*, LU8XP\*, LU8XQ\*, LU8XR\*, LU8XS\*, LU8XT\*, LU8XU\*, LU8XV\*, LU8XW\*, LU8XX\*, LU8XY\*, LU8XZ\*, LU8YA\*, LU8YB\*, LU8YC\*, LU8YD\*, LU8YE\*, LU8YF\*, LU8YG\*, LU8YH\*, LU8YI\*, LU8YJ\*, LU8YK\*, LU8YL\*, LU8YM\*, LU8YN\*, LU8YO\*, LU8YP\*, LU8YQ\*, LU8YR\*, LU8YS\*, LU8YT\*, LU8YU\*, LU8YV\*, LU8YW\*, LU8YX\*, LU8YY\*, LU8YZ\*, LU8ZA\*, LU8ZB\*, LU8ZC\*, LU8ZD\*, LU8ZE\*, LU8ZF\*, LU8ZG\*, LU8ZH\*, LU8ZI\*, LU8ZJ\*, LU8ZK\*, LU8ZL\*, LU8ZM\*, LU8ZN\*, LU8ZO\*, LU8ZP\*, LU8ZQ\*, LU8ZR\*, LU8ZS\*, LU8ZT\*, LU8ZU\*, LU8ZV\*, LU8ZW\*, LU8ZX\*, LU8ZY\*, LU8ZZ.

14 Mc. Phone—2AMB: CN8B\*, KM8BL\*, KC8TH\*, LU8AA\*, LU8AB\*, LU8AC\*, LU8AD\*, LU8AE\*, LU8AF\*, LU8AG\*, LU8AH\*, LU8AI\*, LU8AJ\*, LU8AK\*, LU8AL\*, LU8AM\*, LU8AN\*, LU8AO\*, LU8AP\*, LU8AQ\*, LU8AR\*, LU8AS\*, LU8AT\*, LU8AU\*, LU8AV\*, LU8AW\*, LU8AX\*, LU8AY\*, LU8AZ\*, LU8BA\*, LU8BB\*, LU8BC\*, LU8BD\*, LU8BE\*, LU8BF\*, LU8BG\*, LU8BH\*, LU8BI\*, LU8BJ\*, LU8BK\*, LU8BL\*, LU8BM\*, LU8BN\*, LU8BO\*, LU8BP\*, LU8BQ\*, LU8BR\*, LU8BS\*, LU8BT\*, LU8BU\*, LU8BV\*, LU8BW\*, LU8BX\*, LU8BY\*, LU8BZ\*, LU8CA\*, LU8CB\*, LU8CC\*, LU8CD\*, LU8CE\*, LU8CF\*, LU8CG\*, LU8CH\*, LU8CI\*, LU8CJ\*, LU8CK\*, LU8CL\*, LU8CM\*, LU8CN\*, LU8CO\*, LU8CP\*, LU8CQ\*, LU8CR\*, LU8CS\*, LU8CT\*, LU8CU\*, LU8CV\*, LU8CW\*, LU8CX\*, LU8CY\*, LU8CZ\*, LU8DA\*, LU8DB\*, LU8DC\*, LU8DD\*, LU8DE\*, LU8DF\*, LU8DG\*, LU8DH\*, LU8DI\*, LU8DJ\*, LU8DK\*, LU8DL\*, LU8DM\*, LU8DN\*, LU8DO\*, LU8DP\*, LU8DQ\*, LU8DR\*, LU8DS\*, LU8DT\*, LU8DU\*, LU8DV\*, LU8DW\*, LU8DX\*, LU8DY\*, LU8DZ\*, LU8EA\*, LU8EB\*, LU8EC\*, LU8ED\*, LU8EE\*, LU8EF\*, LU8EG\*, LU8EH\*, LU8EI\*, LU8EJ\*, LU8EK\*, LU8EL\*, LU8EM\*, LU8EN\*, LU8EO\*, LU8EP\*, LU8EQ\*, LU8ER\*, LU8ES\*, LU8ET\*, LU8EU\*, LU8EV\*, LU8EW\*, LU8EX\*, LU8EY\*, LU8EZ\*, LU8FA\*, LU8FB\*, LU8FC\*, LU8FD\*, LU8FE\*, LU8FF\*, LU8FG\*, LU8FH\*, LU8FI\*, LU8FJ\*, LU8FK\*, LU8FL\*, LU8FM\*, LU8FN\*, LU8FO\*, LU8FP\*, LU8FQ\*, LU8FR\*, LU8FS\*, LU8FT\*, LU8FU\*, LU8FV\*, LU8FW\*, LU8FX\*, LU8FY\*, LU8FZ\*, LU8GA\*, LU8GB\*, LU8GC\*, LU8GD\*, LU8GE\*, LU8GF\*, LU8GG\*, LU8GH\*, LU8GI\*, LU8GJ\*, LU8GK\*, LU8GL\*, LU8GM\*, LU8GN\*, LU8GO\*, LU8GP\*, LU8GQ\*, LU8GR\*, LU8GS\*, LU8GT\*, LU8GU\*, LU8GV\*, LU8GW\*, LU8GX\*, LU8GY\*, LU8GZ\*, LU8HA\*, LU8HB\*, LU8HC\*, LU8HD\*, LU8HE\*, LU8HF\*, LU8HG\*, LU8HH\*, LU8HI\*, LU8HJ\*, LU8HK\*, LU8HL\*, LU8HM\*, LU8HN\*, LU8HO\*, LU8HP\*, LU8HQ\*, LU8HR\*, LU8HS\*, LU8HT\*, LU8HU\*, LU8HV\*, LU8HW\*, LU8HX\*, LU8HY\*, LU8HZ\*, LU8IA\*, LU8IB\*, LU8IC\*, LU8ID\*, LU8IE\*, LU8IF\*, LU8IG\*, LU8IH\*, LU8IJ\*, LU8IK\*, LU8IL\*, LU8IM\*, LU8IN\*, LU8IO\*, LU8IP\*, LU8IQ\*, LU8IR\*, LU8IS\*, LU8IT\*, LU8IU\*, LU8IV\*, LU8IW\*,

# S.W.L.

**Maurice Cox, WIA-13055**  
Flat 1, 37 Boyd Crescent,  
Olympic Village, Heidelberg,  
N.23, Victoria.

[Enquiries have been received as to why there have been no S.W.L. Notes. Ian Hunt, your previous scribe, found it impossible to carry on. Early in May, Maurice Cox approached me with an offer to write the notes, which were to commence in the June issue. Owing to the extensive coverage given in that issue to the F.A.S.C. Proposals to reduce some of the Amateur Bands, space was not available. It is now up to the S.W.L. Groups of each Division to assist Maurice Cox to keep this section alive.—Editor.]

Hi fellows! This is your new scribe, so let me introduce myself to you. My name is Maurice Cox, WIA-13055 (address as above), Secretary of the S.W.L. Group, Victorian Division of the W.I.A.

Firstly, I wish to thank our past Secretary and present Assistant Secretary, Ian Hunt, for his outstanding service for the Group in the past, in his duties as Secretary and Scribe. Ian has now passed on to the ranks of sending and receiving, and I am sure we all wish him success on the bands that he has listened to for so long.

Now, seeing that this is my first attempt at doing anything like this, I hope you will bear with me and help in making these notes in the magazine a success. Please write to me with news from your Groups as to what you have been doing and future activities. You will be frightened to write, I will answer either personally or via the notes.

We want to make the S.W.L. Groups a big success in this country; we have the numbers, but somehow not the complete interest. You see, I myself don't care much whether I become an Amateur or not. I like s.w.l., not only the Amateur bands, but also the s.w.b.c. bands. So in future you'll see not only news on the Amateur bands but also the s.w.b.c. bands.

To make a good job of these notes I want news again. I am going to say "send me the news". I am certain you will chaps, so don't let me down.

If you have reports on either bands, write to me at my address, or phone me at my work, The Repatriation Department, MCXY 110, Extension 311, and state what you have heard, when, and frequency, etc.

## VICTORIAN S.W.L. GROUP

March.—I took the Secretary's chair for the first time being elected in August owing to a slight delay in hospital with polio, anyhow we beat that okay. The meeting was attended by 13 members (more to come I hope in future). Ian Hunt reported that Council had increased the age from 18 to 19 years for Junior Members. Other Associate Members' fees to be considered in 12 months for reduction. A receiver station is to be set up in the rooms for our use, also Ian Thomas proposed that we Victorians change the rest of the States in the R.D. Contest. What about it chaps? (Challenge accepted by N.S.W.—See Correspondence.—Ed.) John McEwen suggested we encourage new members from the High and Technical Schools and this was agreed. Then yours truly gave a lecture on short wave reporting and Ian Hunt one on antennae.

April.—That was a beauty. 273 came along and gave us a demonstration on stereophonic sound. It was wonderful. So much so that I have asked him to come along again. Thanks very much for your demonstration Fred.

May.—Our honoured guest was Eric Trebilcock. He gave us a talk on what he has accomplished in 32 years of s.w.l'ing. He brought along cards to show us, some had been on them, others were incomplete. He told us he has heard 256 countries and of them 247 confirmed, also he showed us his awards and more were some very nice certificates. Eric mentioned he listens an average of three hours per day every day, doesn't worry about conditions at all. He also said his listening comprises 20% c.w. and 10% phone. He stated that every s.w.l. should learn c.w. and should

have his own card. In the last 32 years he has sent out 30,000 reports and received 15,000 cards.

The rx equipment is a baby Hallcrafters, two antennae—a long wire and a vertical. Most of his listening is done at a night when other countries are awake and we asleep. These are the main points of his talk which lasted 1½ hours and I could go on giving many other interesting facts of his talk. I would like to convey to Eric our whole hearted thanks for one of the most interesting and enjoyable talks that we have ever had. Many thanks Eric. We hope you may come along again sometime in the future.

June meeting will be a rx night so I hope you chaps will bring along your rx's to discuss and tell us all about them.

The card of the month I am going to keep going and also the mammoth one. George Fox was the winner of the January Card of the Month. I have forgotten what the call sign was. February, March and April—no card of the month. Apparently nobody received any cards in those months.

Ian Thomas has written me a couple of letters, and also about the card of the month and the mammoth contest. Well Ian they are still going along. Thanks for your offer of service, I may ask for your help. Hope your antennae is up again. Yes conditions were particularly good on most of the bands in April. Ian also reports having logged 180 DX stations on 15 and 20 mhz during the month of May including 100 countries—40 and G13—bringing his total to 82 countries heard. Has received cards from BV105, PI1J and T2HP. Good work Ian.

Ian Hunt received a letter from the Secretary of the VK2 S.W.L. Group (and passed it on to me) enquiring about the S.W.L. Notes and advising that the Group has a publicity officer and hope to have something for the notes in A.E. Board news, just what yours truly want. Thanks very much VK2.

Now here is a letter from a new member of the Group, E. Hutchins who has just arrived from Vic. He writes me about his activities in the wireless world, "I have been interested for some years but pressure of farm work has not allowed me to follow it with any sort of fixed activity. However, I hope that within a few years I will have sufficient knowledge to try for a licence. Have been working hard on c.w. My listening equipment at the moment is a handspread Radiola which works very well on 80, 40, 20 and 15 mhz and am at present building a converter to cover the other bands." Thanks a lot for your letter Mr. Hutchins and hope to hear from you again in the near future.

Max Hilliard won the VK3 listeners' section of the Ross Hill Contest. Congrats. Max.

## NEW SOUTH WALES

Office-bearers of the N.S.W. S.W.L. Group are as follows: President, John E. Douglas, WIA-12012; Vice-Pres., Barney Smyth, of the High George Mains, L2023; Secretary, Tim Mills, L2052 (VK-12052).

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22TM; Publicity Officer, Les Stahl, L2049; QSL Manager, Barney Smyth.

Now that the Group's teething troubles are over we feel that this year can be even more successful than last. Your President and office-bearers would like to see all city members attending the monthly meetings. We want to hear from country members (all letters will be answered). We want your ideas and suggestions. We especially want this year to be a successful and active one.

W.I.C.E.N.—Here the S.W.L. Group can be of use if the need arises. You should listen into practice sessions (first Tuesday of month at 8 p.m. 40 and 80 mhz) and become familiar with the procedure. In times of emergency you could be needed as a second operator to your local Amateur. We intend to discuss this matter with W.I.C.E.N. Officer, Bob Winch (20A) and see how we fit with the picture.

New Members.—The more the merrier, we would like each of you to obtain one or more new members. At the May general meeting of the Institute, there were 363 associates and 83 s.w.l.s. on the books. We want to see the other 362 s.w.l.s.—how about it?

Meetings.—There will be at least one meeting per month and several outings this year. All meetings will be held at Gore Hill Technical College on the first Friday of the month until further notice. Good lectures for the year are being arranged. Many outings are being planned including, we hope, a tour of the R.A.A.F. control centre at Richmond and the Brindley C.P.C. Receiving Station.

Technical Group.—We hope to start a technical group to help you (particularly country members who cannot attend meetings) with your radio headaches. The actual form of this group has not been finalised. If you can assist or have any ideas on the subject let us know.

Log Books, Call Books.—We have log books if you want them. There is a new call book coming out this month. They will be obtainable from the Secretary of the Institute, P.O. Box 1734, G.P.O., Sydney.

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# NOTES

## FEDERAL

### 150 WATTS PLUS OR MINUS!

The P.M.G. Department will be asked to permit an overall meter tolerance of 10% in relation to meters used by Amateur stations for purposes of measuring d.c. power input to the final stage of transmitters.

The Federal Council considers this justifiable since most meters with the exception of highly priced accurate instruments would vary by this amount. It is because of a permissible tolerance in manufacture of meters for general metering work that broadcast stations have a meter reading tolerance.

The P.M.G.'s Departmental Radio Inspectors would normally allow for such tolerance in meters but cases have been reported where such was not the case and the Amateur concerned was reported for running a few watts above his licensed power when the d.c. input to the final was measured by the Inspector's naturally more accurate meter. From engineering principles, the few watts gained by a meter reading low by an acceptable tolerance would mean practically nothing in radiated power and signal strength at the receiving station.

### REIMBURSEMENT TO MEMBERS OF

#### PUBLICATIONS COMMITTEE

Due to the increase in the amount of work involved in producing the Institute's magazine, Amateur Radio, Federal Council has agreed to a recommendation to the Headquarters Division (VK3) that consideration be given to implementing some form of payment to members of the Publications Committee for the work and time given to its publication. Some suitable scheme can be arranged it should go a long way towards providing for more technical articles and of a higher standard.

### A BETTER INTERNATIONAL AMATEUR

#### RADIO UNION

The Federal Council has empowered John Moyle, VK2JU, as the Amateur representative to Geneva, to arrange during the course of the I.T.U. Conference a meeting of I.A.R.U.

## CONTEST CALENDAR

Compiled by W.I.A. Fed. Contest Com.

★

### NATIONAL FIELD DAY:

Comments on any changes to the F.C.C., W.I.A., Box 371B, G.P.O., Hobart, Tasmania.

### REMEMBER DAY CONTEST, 1959:

Dates: Saturday, 16th August, 1959.  
Duration: 1800 hrs. E.A.S.T. to 1759 hrs. E.A.S.T. As published "A.R.", June, 1959.  
Rules: Return postmarked not later than 6th September, 1959.

### SCANDINAVIAN ACTIVITY CONTEST:

Dates: C.W.—1500 GMT, Sept. 20, 1959 to 1800 GMT, Sept. 21, 1959.  
Phone—1500 GMT, Sept. 26, to 1800 GMT, Sept. 27, 1959.

Rules: Watch "A.R.",  
Logs: Mailed not later than 15th Oct. '59 to Contest Manager, S.R.A., P.O. Box 306, Helsinki, Finland.

### VK-ZL DX CONTEST, 1959:

Dates: Phone—1000 GMT, Saturday, 3rd Oct.—1000 GMT, 4th Oct. 1959.  
C.W.—1100 GMT—11th Oct. 1959.  
Rules: Overseas, as for 1957. VK-ZL Bonus value altered (watch Aug. "A.R.").

### "CO" WORLD-WIDE:

Dates: Phone—Last week-end Oct. '59.  
C.W.—Last week-end Nov. '59.

member representatives to discuss the organisation and operation of the I.A.R.U. with a view to making it "work" more satisfactorily on behalf of the Amateur Service in the international sphere. One proposal will be that member countries should endeavour to enable the Union to function as it should do under its present constitution.

### W.I.A. FEDERAL CONVENTION IN PERTH IN 1962

The Federal Council, subject to ratification, has agreed to the holding of a Federal Convention in Perth in 1962, the year the Empire Games will be held there.

The West Australian Division is most anxious for this to be so and are prepared to raise an estimated £300 as the difference between holding the Convention in Melbourne where it is generally held. It is suggested that considerable saving can be made by an application for reduced air fares; this will be investigated at a later date.

### W.I.C.E.N. FREQUENCIES

The Federal Council will be asked to ratify proposals to standardise the frequencies of 7060 Kc. as the primary frequency and 7040 Kc. as the secondary frequency for the use of the Wireless Institute Civil Emergency Network (W.I.C.E.N.) will be asked to add 3501 Kc. and 7002 Kc. be accepted as the national guard frequencies.

### SHORT WAVE LISTENER AWARDS

The New South Wales Division of the W.I.A. has been asked by Federal Council to submit draft recommendations for short wave listening awards etc. By encouraging short wave listening to Amateur Service transmissions and the formation of S.W.L. Groups and activities within the Institute, a useful growth of Amateur station licensees is envisaged.

### FREQUENCY SHIFT KEYING

Proposals from the New Zealand Association of Radio Transmitters (Incorporated) for the use of frequency shift keying in bands other than above 2970 Kc. have been studied by the New Zealand Post Office and approval has been given for the use of FSK in the following bands employing any degree of frequency shift up to 300 cycles:

Band Kc/s.	Frequencies for FSK Kc/s.
9,500 — 3,900	3,500 — 1,550
7,000 — 7,300	7,000 — 7,050
14,000 — 14,350	14,000 — 14,100
21,000 — 21,450	21,000 — 21,100
27,250 — 27,250	27,250 — 27,250
28,000 — 28,700	28,000 — 28,100

### MORSE CODE PRACTICE TRANSMISSIONS

The following morse code practice transmissions are currently operating for those who want to obtain regular practice for the A.O.C.P.:  
VK3 Division on 3573 and 7650 Kc. Monday evenings 2030 to 2100 hours E.A.S.T.  
VK3 Division on 3550 Kc. each Sunday 2030 to 2100 hours E.A.S.T.  
VK3 Division is not operating at present.  
VK3 Division on 3504 Kc. Sunday evenings 2100 to 2130 hours Adelaide time.  
VK3 Division on 3600 Kc. Wednesday m.w. and 39 Mc. until c.w. Wednesday evenings at 2000 hours W.A.S.T.  
VK7 Division on 3515 Kc. 1915 to 1930 hours E.A.S.T. night except Tues. & Sundays.  
VK3 Division is not operating at present.

The New Zealand Air Force station ZKF also transmits morse code practice transmissions every night at 1830 (N.Z. time) on 3324 and 6685 Kc.

### W.I.A. OFFICIAL BROADCASTS

At the Federal Convention held in Melbourne during Easter the Federal Council discussed the times and frequencies used by the official W.I. stations for the Sunday morning broadcast and intrastate hook-ups following the broadcasts. Subject to ratification by all Divisions the following will be agreed:

Official Broadcasts on 7146 Kc.	
VK2 1100 hours Eastern Aust. Standard Time	
VK3 1030 " " " " " "	
VK4 0800 " " " " " "	
VK5 0820 " " " " " "	
VK6 1130 " " " " " "	
VK7 1000 " " " " " "	
VK8 0830 " " " " " "	

Intrastate Hook-ups on following Frequencies:  
VK2 7050 Kc. VK6 7085 Kc.  
VK3 7125 Kc. VK7 7115 Kc.  
VK4 7105 Kc. VK8 7105 Kc. (may be specified)  
VK5 7135 Kc. VK3WIA 7095 Kc.  
There is no reason why this table should not be ratified and as soon as this is done Divisions will be officially notified of its implementation to take place forthwith.

## LIMITED LICENSEES SEEK TO PRACTICE

### MORSE CODE ON V.H.F. BANDS

A motion discussed at the Easter Federal Convention seeking permission for licensees holding Limited A.O.C.P.'s to practice morse code on the v.h.f. bands in which they are licensed to operate was defeated by four votes to one, with two Divisions refraining from voting. The general feeling was that full licensees cannot use the bands (including the v.h.f. bands) for this purpose without obtaining a license and in view of the morse code practice transmissions currently in operation for this purpose the Federal Council, by a majority, agreed that adequate facilities were available for Limited license holders to obtain practice without needlessly cluttering up the v.h.f. bands. If this is the real reason for wanting such a facility, then it would seem the Federal Council made a wise decision.

### SUMMARY OF W.I.A. I.T.U. FUND CONTRIBUTIONS

Licensed Amateurs		
Division	Amount	Subscribers
VK1	£20 19 0	13
VK2	£20 19 0	13
VK3	£50 10 6	513
VK4	£155 9 9	331
VK5	£255 18 6	182
VK6	£137 0 0	110
VK7	£88 12 3	78
VK9	£33 6 5	24

Total £191 4 6 143

### Associate Members, S.W.I., Miscellaneous

Division	Amount	Subscribers
VK1	£9	—
VK2	£125 9 5	97
VK3	£22 15 6	20
VK4	£14 5 0	8
VK5	£10 2 0	—
VK6	£24 8 0	5
VK7	£28 6 0	17
VK9	£1 0 0	1

Total £214 16 11 162

### Overseas

Hong Kong Amateur Radio Society and VSI Amateurs	£30 5 0
Trade Organisations	
Ducon (Aust.) Pty. Ltd.	£23 6 0
Trimax Transformers Pty. Ltd.	5 0 0
	£23 0 0
<b>Grand Total</b>	<b>£2,256 6 5</b>

It is estimated that expenses of organising the Fund including air fares to bring the W.I.A. representative to Melbourne for the meetings of the Frequency Allocation Sub-Committee will not exceed £250.  
The Fund will close on July 31. If you have not already subscribed please address your donation to Federal Secretary, W.I.A. Federal Executive, Box 2611W, G.P.O., Melbourne, before this date. The first tranche of money gratefully received. Help us to reach the target figure of £2,300.

## NEW SOUTH WALES

The May general meeting of the Division was held at the usual venue, Science House, Gloucester Street, Sydney, on 22nd inst. The President, Dave ZEO, opened the meeting at 8 p.m., there being some 65 members present. The only visitor present was DXN from Strathfield. Following the usual formalities, the meeting was thrown open for business and it was decided to make a donation to the Raird-Basden Fund. Mr. Basden has for some years made available all the facilities of the Tighes Hill Technical College to the Hunter Branch for the use of members and visitors, all this being done without charge to the Branch. New members totalling 21 were admitted to membership, the membership of the Division now stands at 1102.

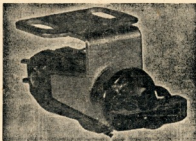
Council would like to congratulate those who undertook the recent relays in connection with the Sunday Broadcasts and would thank participants for their efforts in this regard.  
The President made comment on the progress made by the Division in bringing to official and public notice the recommendations of F.A.S.C. Interest has been created in an unprecedented manner, the response was most gratifying, and the result of this matter has now reached high political level. Council is justly proud of the members' support, and would thank all who took action. Do continue to stand on your laurels chaps, but continue to support F.E. and Alan Fairhall in their difficult task.

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the boys together and visit Townsville for a special meeting some Saturday night. Also toys with the idea of operating a station at the local trades and industries fair.

## SOUTH AUSTRALIA

We must surely all thank the V.h.f. Section for bringing forward the excellent programme provided at the last monthly meeting, when, under the guidance of Les Harper, we were alerted through the use of the various complexities of radio aids to navigation, particularly as applied to the Australian aviation needs.

It was obvious that Les had a lot more he would like to have us, but he did well to condense such a vast subject into the time limit, yet giving all the pertinent details necessary to "know what's what" and to abide with, which ranged from the humble radio compass to distance measuring equipment and blind landing equipment.

Films ranged from a set of slides of a trip he did to Ayers Rock with dead reckoning as the navigation method, to movies showing actual "talk down" by advanced radar methods, with all between.

Wall charts added to interest and made it easier for him to explain in detail a number of technical details of the "flying" types, as indeed most of us always will be.

The responsibility of "those up front" and the boys in the ground" who maintain these things is fairly great, yet what a comfort to those who use the air, to know the skills that are placed for safe air travel.

One voice in the room was in mentioning a certain b.e. station that was heard "loud and clear" at Townsville and as a result an initial and a further check was made. It was impossible to connect Warwick after that, in fact for several minutes the sound of bustling wastecut buttons was all we could hear.

Natasha, he, Warwick, SPS, had to pass the vote of the things he did without using more than 500 words or so. (Gosh, is that all Editor).

The various important matters arising from the forthcoming I.T.U. Conference and speeches by persons associated with the build up to that and the addition of a new member to the matter of W.I.A. observer attendance. Thanks to VK3 Sunday Broadcasts on 20 mx we have been kept in touch, and have heard the details of the address to be made at the future, what about a W.I.A. Federal Broadcast on 20 at regular intervals, would keep country members in touch with the goings on of our numbers, up to date on Federal matters.

Whilst on the matter, if you have not as yet sent your sub. in for I.T.U. Fund, don't delay any longer, as it is due through the Divisional Secretary or Treasurer.

We have a new Treasurer in Les Goldfinch, who has stepped into the vacancy by the resignation of Clem Appleby who had to vacate on pressure of duties elsewhere; can't give you Les' address as yet but he is closely associated with Secretary John, so address to P.O. Box 1234 will find Les OK.

QSL distribution, in hands of George 5RX, address 27 Belair Rd West Mitcham, is a bit slow in the last few months. Quite a few fellows don't collect theirs at the meetings, or who don't get along anyway, so George is accumulating quite a backlog of QSLs. Some fellows and send along a self addressed stamped envelope to George for your address, and then you get one lot sent another envelope, to keep the files clear. There is a guide to be distributed and some of those rare ones you have been waiting for might be there waiting.

Dudley 2DQ, a VK3 Division member, dropped in on a QSO recently, using a s.s.b. rig generating on fundamental frequency, the advantage being that it is not necessary to follow. Dudley happens to be a pal of Doc SMD, haven't found out if that's a good thing or is a bad thing in the courts, but the Doc was asked by a VK3 a question re "Doc" so Dudley described Doc's profession, not medical, but "curing souls", can you beat that, Frank?

Dropped in on Hurtle SHW, recently, and found him investigating the mysteries of a "top up" in the tower. But for the job and accept some grease. A nice set-up at that QTH with plenty of evidence of success on DX judging by the many Award Certificates adorning the walls of the room. But for the job and at the foot of the tower, provides a good layout and short leads for the full sized 3 el. 20 ft. tower and puts out a very good signal—mostly on 20—with an AR7 x3 as the hearing aid. A very cosy set-up for winter also, from heat from a fuel fired room heater; but for the job and interested who may share the rig some day.

Slow more practice from Doc SMD at 9 p.m. each Sunday on 80 still attracts great interest,

you will remember Tom 5TL did this whilst Doc was on vacation. A good service to those gaining speed, and for those who want some really fast c.w. call him after 8.30.

Burnie 5WC advises their new shack not yet passed the drawing board stage, still using his home QTH and a good signal, heard often on 40. Chas. 6ON gave a buzz recently after a fair spell, reason not known but nice to hear the voice again. Ron 5FY at Elizabeth vying with 6ON and 6ON gave a buzz recently after a fair spell, reason not known but nice to hear the voice again. Heard occasionally on 40, mostly Sunday mornings. Reg SRR continues to make a good number of contacts on d.s.b. and now finds himself somewhat of an authority on the subject of transmission, that is, judging by the queries he gets and the number of fellows who are following him.

Had any more callers lately Athol 5LQ? Not heard on 40 lately, too busy on 15 c.w. maybe. Those of us who growl about conditions on 40 these days could take a lesson from Luke 5LL and Frank 5MZ and perhaps Carl 5SS who seem to make it work for them each night to VK2, perhaps they have a special "duet", but conditions or not they seem to make it. Cheers Reg and Jim. Heard that Ern 5EN was on 40 recently, heard up the rig more often Ern, don't get the time, but it was a good one, and that melodious Rex 3DO voice lately? Too much painting or hi-fi?

## TASMANIA

Our congratulations go to Ken TKM on the occasion of his recent marriage and, as well, on the gaining of his Doctor of Philosophy Degree at the University. As Ken is the recipient of a scholarship, which will take him to the Massachusetts Institute of Technology for several years to further his studies into cosmic rays, this Division was pleased to elect him an honorary member during his absence. Our congratulations are also due to George TGC and his XYL on the acquisition of an enormous YF marine compass. Whilst Mr. Roy Emmett on obtaining his limited license at the beginning of June.

Any one of us would have been delighted to be able to hear the "Jack VTB" was more delighted than most, because it meant he has now worked all Zones. Very good work, OM. Max TMX has recently put up a new antenna, strictly in accordance with the handbook. It is more, it seems to be working strictly in accordance with what the handbook claims, judging from the fact he is receiving these days. TFH has been heard putting in a strong signal in the south and the modulation sounds good too. Harold TMZ recently got a modulator working very nicely, a new antenna. We hope, Harold, that the hook-up wire you used was not out of the keying circuit.

Several VK3 stations have been about the middle of May exchanging numbers with ZLs on the 80 mx band in their Sangster Shield Contest for low powered stations. Judging from the number of ZLs to be heard with good signals, this Contest clearly demonstrated that high power in itself is not necessarily the answer to getting out successfully, but rather that efficiency, both in tx and antenna, do play a significant part.

The QSL manager has had a very busy time in the last few months. The number of outward cards. Some "personality" stations have been heard in VK3 during May. George 5ELA has heard on 80 at 34th in the 1000 class, very good work. Numerous Tasmanian friends. One WEDSO, QSL manager for the 5th district, tells me he handles about 1000 QSLs a week. Clive 5ZL has been putting in a wonderful signal on 80 mx. Five mobile marine stations have been active, a GMB on 80 mx, an OZ4 on 40 mx and three stations on 15 mx. Don W14 has appeared in print in "QST" in the month of May.

2 mx activity is receiving quite a boost with the stations in the north. The 20 mx contact with YBQ and TLZ in the north. We hope that there will be sufficient heat generated by the portable gear on the top of Mt. Wellington to melt the snow on the mountain. Alan TMY has a new tx on the air in which a pair of 6146s modulate an 813 in the final stage with Class C.

Seven Associate Members were elected at the June meeting of the Division. All of these chaps are currently doing the A.O.C.P. course at the Technical College. The 20 mx contest was suggested at the June meeting out of which, it is hoped, Council will be able to select a balance of stations to be invited to compose the Federal Contest Committee after obtaining their appointment from Federal Council. We compliment the VK3 Division for the initiative shown in their 80 mx contest month. I shall certainly be looking for VK9 contacts on that band during that month.—ZZZ.

## HAM ADS

1/- per line, minimum 3/-.  
Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 31st of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

**FOR SALE:** There is still a lot of first class parts and equipment available. Write J. K. Herd, 6 Balcombe Street, Mornington, Vic.

**SELL:** As new Bendix Radio Control Box fitted with 5-pole push-button switches, 5 bezels with globes and multi contact by key switch. Posted for 25/-, 6 volt vibrator power supply, 200v., filtered output, ideal car radio, etc. No use since bought. Posted for £3. K. A. Robertson, Port Albert, Vic.

**SELLING Everything:** National HRO, £60. Halicrafters SX28, £70. Band switched (10, 15, 20, 40, 80 mc) table-top 60w. phone and c.w. Xmitter, relay operated, £55. 150w. phone and c.w. Xmitter, relay operated, £65. Xtal microphones, amplifiers, transformers, power supplies, etc. Circuits of above receivers and xmitters. No junk. Accept offers on everything. L. Hoobin, 65 Reserve Rd., Beaumaris, Vic.

**SELL:** No. 122 Set Amplifier, four 807s in parallel as 60w. linear amplifier to boost output; works from 12v. generator, £5 without tubes. Army Amenities Amplifier, 10w., 6V6 p.p. output 12v. generator input, impedance matching network for up to four speakers; Best offer. New Chokes, 6 henry, approx. 250 mA., 2/- each. C. Rann, 2 Georgiana St., Sandringham, Vic. (XW 6328).

**SELL:** Philips Signal Generator Type TA101C, beautiful condition, £22/10/0. Also Portable Typewriter, latest model, absolutely new, £32/10/0. Sell or swap for good Communications Rx or other suitable Radio Gear. M. J. O'Brien, C/o P.O. San Remo, Vic.

**SELL:** Type 3 Mk. 2 Transceiver, as new condition, £35. Communication Receiver, BC348R, 1st class order, £35. Grey crackle finish Metal Cabinet, 22" wide, 18" deep, 3" high, door back and front, drilled for standard rack mounting, £10. R. Jepson, 24 Tennyson St., Highbury, Vic. (Phone: 93-8505).

**SELL:** Complete A. & R. 75 watt Class B Modulator with tubes and plate current meter, less power supply, £25. R. H. Cunningham, 384 Glenferrie Road, Malvern, Vic. (Phone: 50-6397).

**WANTED:** MN26C Bendix Radio Compass Rx and/or accessories. Pref. uncompensated. Also Radio Corp. RC8 Tx-Rx complete. M. J. O'Brien, C/o P.O. San Remo, Vic.

**WANTED:** Clean outer cover for Type T.U. Tuning Unit. Price, etc., to L. A. Deane, 21 Davenport Terrace, Hazelwood Park, S.A.

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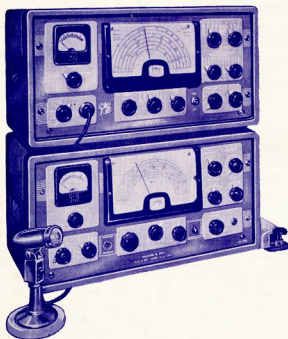
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